Vol. 1028 Number 2

OFFICIAL GAZETTE

of the

UNITED STATES PATENT AND TRADEMARK OFFICE

Route to:

PATENTS

March 8, 1983

U.S. DEPARTMENT OF COMMERCE

Patent and Trademark Office

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OFFICIAL GAZETTE of the UNITED STATES PATENT AND TRADEMARK OFFICE

March 8, 1983 Volume 1028 Number 2

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The following are mailed under direction of the Superintendent of Documents, Government Printing Office, Washington, D.C., 20402, to whom all subscriptions should be made payable and all communications addressed:

THE OFFICIAL GAZETTE (PATENT SECTION), issued weekly.

THE OFFICIAL GAZETTE (TRADEMARK SECTION), issued weekly.

GENERAL INFORMATION concerning PATENTS.

GENERAL INFORMATION concerning TRADEMARKS.

PRINTED COPIES OF PATENTS are furnished by the Patent and Trademark Office at $1.00 each; PLANT PATENTS in color, $8.00 each; copies of TRADEMARKS at $1.00 each. Address orders to the Commissioner of Patents and Trademarks, Washington, D.C., 20231.

Printing authorized by Section 11(a)3 of Title 35, U.S. Code P.T.O.

PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty Information

For information concerning the PCT member countries see the notice appearing in the Official Gazette at 1017 O.G. 10 on Apr. 13, 1982. For use of the European Patent Office as a Searching Authority for PCT applications filed in the United States, see the notice in the Official Gazette of Sept. 28, 1982 at 1022 O.G. 52.

Note that the domestic PCT fees have been increased as of Oct. 1, 1982 by a rule change to 37 CFR 1.445 that was published at 1021 O.G. 11 on Aug. 10, 1982. Also note that the international PCT fees have changed as of Jan. 1, 1983 and the Search Fee for the European Patent Office as Searching Authority changed as of Jan. 22, 1983. The notice regarding the change in international fees and the Search Fee for the European Patent Office appeared at 1025 O.G. 27, on 28 Dec. 1982. The current schedule of fees is as follows:

Transmittal fee	$ 125.00
Search fee	
U.S. Patent and Trademark Office as Searching Authority	
• No corresponding prior U.S. national application filed	500.00
• Corresponding prior U.S. national application filed	250.00
European Patent Office as Searching Authority	
• All cases	670.00
International Fees	
Basic Fees (first 30 pages)	265.00
Basic Supplemental Fee (for each page over 30)	5.00
Designation fee (for each national or regional office)	65.00

GERALD J. MOSSINGHOFF,
Dec. 3, 1982. *Commissioner of Patents and Trademarks.*

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b)).

3,979,548, Re. S.N. 456,251, Filed Jan. 6, 1983, Cl. 428/425, POLYURETHANE COATED SAFETY GLASS, W. Schafer, et al., Owner of Record: *Saint Gobain Industries, Neuelly sur Seine, France,* Attorney or Agent: Alexis Barron, et al., Ex. Gp.: 164

4,127,078, Re. S.N. 455,879, Filed Jan. 5, 1983, Cl. 112/266, YARN ADJUSTER FOR CONTROLLING EVENNESS OF YARN TUFTS, Abram N. Spanel, et al., Owner of Record: *Abram N. Spanel, Princeton, N.J.,* Attorney or Agent: J. Rodman Steele, Jr., et al., Ex. Gp.: 353

4,235,134, Re. S.N. 444,434, Filed Nov. 24, 1982, Cl. 81/91C, ADJUSTABLE WRENCH, Thomas R. McLendon, Owner of Record: *Inventor,* Attorney or Agent: Bruce G. Klaas, Ex. Gp.: 323

4,242,539, Re. S.N. 453,992, Filed Dec. 28, 1982, Cl. 179/05/.5, TELEPHONE INFORMATION DISPLAYING DEVICE, Kazuo Hashimoto, Owner of Record: *Hashimoto Corp. Kabushiki Kaisha, Tokyo, Japan,* Attorney or Agent: Anthony H. Handal, et al., Ex. Gp.: 235

4,243,844, Re. S.N. 456,257, Filed Jan. 6, 1983, Cl. 179/81R, HOLD CIRCUIT FOR TELEPHONE SYSTEM, Herbert H. Waldman, Owner of Record: *Inventor,* Attorney or Agent: Sidney G. Faber, et al., Ex. Gp.: 214

4,244,956, Re. S.N. 452,296, Filed Dec. 12, 1982, Cl. 424/258, METHOD OF TREATING INFLAMMATION, Floyd E. Dewhirst, Owner of Record: *Forsyth Dental Infirmary for Children, Boston, Mass.,* Attorney or Agent: Richard R. Crowley, Ex. Gp.: 122

4,245,507, Re. S.N. 456,330, Filed Jan. 6, 1983, Cl. 73/356, TEMPERATURE PROBE, Thaddeus V. Samulski, Owner of Record: *Inventor,* Attorney or Agent: Gerald P. Parsons, et al., Ex. Gp.: 244

4,247,388, Re. S.N. 455,781, Filed Jan. 15, 1983, Cl. 208/101, HYDRODEWAXING CATALYST PERFORMANCE, Frederick Banta, et al., Owner of Record: *Mobil Oil Corp., New York, N.Y.,* Attorney or Agent: Charles A. Huggett, et al., Ex. Gp.: 116

4,297,761, Re. S.N. 440,189, Filed Nov. 8, 1982, Cl. 15/105, GARBAGE DISPOSAL UNTENSIL, Evelyn J. Loos, Owner of Record: *Inventor,* Attorney or Agent: Stanley M. Weir, Ex. Gp.: 242

4,307,936, Re. S.N. 453,321, Filed Dec. 27, 1982, Cl. 350/96.24, SYSTEM FOR COLLECTING SOLAR ENERGY, Tsurunosuke Ochiai, Owner of Record: *Inventor,* Attorney or Agent: Arnold Sprung, et al., Ex. Gp.: 254

4,333,038, Re. S.N. 427,482, Filed Sept. 29, 1982, Cl. 315/3.5, TRAVELING WAVE TUBE DEVICES, Hisaaki Sato, Owner of Record: *Nippon Electric Co., Ltd., Tokyo, Japan,* Attorney or Agent: Maurice E. Gauthier, et al., Ex. Gp.: 256

REQUESTS FOR REEXAMINATION FILED

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.21(b)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

4,025,907, Reexam. No. 90/000,324, Requested: Feb. 7, 1983, Cl. 365/205, INTERLACED MEMORY MATRIX ARRAY HAVING SINGLE TRANSISTOR CELLS, Joel Allen Karp, et al., Owner of Record: *Burroughs Corp., Detroit, Mich.,* Attorney or Agent: Mervyn L. Young, Ex. Gp.: 235, Requester: Hitachi, Ltd., c/o Antonelli, Terry & Wands, Washington, D.C.

4,219,204, Reexam. No. 90/000,322, Requested: Feb. 3, 1983, Cl. 277/188A, ANTI-EXTRUSION SEALS AND PACKINGS, Frederick B. Pippert, Owner of Record: *Utex Industries, Inc., Houston, Tex.,* Attorney or Agent: Browning, Bushman, et al., Ex. Gp.: 245, Requester: Utex Industries, Inc., Houston, Tex.

Errata

"All reference to Patent No. PP04958 to Peter S. Hesse of Ill. for CHRYSANTHEMUM NAMED BRONZE PARLIAMENT appearing in the Official

Gazette of Nov. 23, 1982 should be deleted since no patent was granted."

"All reference to Patent No. 4,358,014 to Frank R. Potucek of Ill. for FASTENER STRIP appearing in the Official Gazette of Nov. 9, 1982 should be deleted since no patent was granted."

"All reference to Patent No. 4,367,260 to Charles Krause of Ky. for COMPOSITE FIBER REINFORCED MEMBER appearing in the Official Gazette of Jan. 4, 1983 should be deleted since no patent was granted."

"All reference to Patent No. 4,367,539 to Endre P. Thoma of Vt. for DYNAMIC MEMORY CELL appearing in the Official Gazette of Jan. 4, 1983 should be deleted since no patent was granted."

"All reference to Patent No. 4,371,886 to Adrian R. Hartman, Alfred U. MacRae and Peter W. Shcackle all of N.J. for HIGH VOLTAGE DIELECTRICALLY ISOLATED DUAL GATE SOLID-STATE SWITCH appearing in the Official Gazette of Feb. 1, 1983 should be deleted since no patent was granted."

"All reference to Patent No. 4,371,887 to Adrian R. Hartman, Terence J. Riley and Peter R. Shcackle of N.J. for HIGH VOLTAGE SOLID-STATE SWITCH appearing in the Official Gazette of Feb. 1, 1983 should be deleted since no patent was granted."

"All reference to Patent No. Re. 31,901 to James A. Broughton of Ky. for LIGHTLY PRIZED TOBACCO appearing in the Official Gazette of Nov. 30, 1982 should be deleted since no patent was granted."

Department of the Treasury
United States Customs Service
(TMK-2 CO:R:E:E)

Notice of Application for Recordation of Trade Name "CHAMS DE BARON LTD."

Application has been filed pursuant to section 133.21 Customs Regulations (19 CFR 133.21), for the recordation under section 42 of the Act of July 5, 1946, as amended (15 U.S.C. 1124), of the trade name "CHAMS DE BARON LTD.," used by Chams De Baron Ltd., a corporation organized under the laws of the State of New York, located at 1350 Broadway, New York, N.Y. 10018.

The application states that the trade name is used in connection with the following merchandise which is manufactured in Taiwan, Hong Kong, South Korea and the Philippines: men's and women's wearing apparel, including shirts, tops, sweaters, jackets and pants in U.S. Patent and Trademark Office Class 39. Appropriate accompanying papers were submitted witht the application.

Before final action is taken on the application, consideration will be given to any relevant data, views, or arguments submitted in writing by any person in opposition to the recordation of this trade name. Any such submission should be addressed to the Commissioner of Customs, Entry, Licensing and Restricted Merchandise Branch, Washington, D.C. 20229, in time to be received no later than 60 days from the date of publication of this notice in the Federal Register.

For Further Information Contact:

Harriet Lane
Entry Licensing and Restricted Merchandise Branch
U.S. Customs Service
1301 Constitution Ave. NW.
Washington, D.C. 20229
(202-566-5765).

Notice of the action taken on the application for recordation of this trade name will be published in the Federal Register.

A. PIAZZA,
For DONALD W. LEWIS,
Director, Entry Procedures and Penalties Division.

Jan. 28, 1983.

PATENT NOTICES

Certificates of Correction for the Week of Mar. 8, 1983.

PP. 4,943	4,326,993	4,352,533	4,360,075
Des. 260,678	4,332,503	4,352,724	4,360,321
3,597,518	4,332,540	4,353,085	4,360,474
3,650,593	4,335,121	4,353,222	4,360,483
3,884,299	4,335,842	4,353,280	4,360,645
4,007,196	4,337,979	4,353,463	4,360,980
4,141,626	4,342,184	4,353,513	4,361,465
4,180,862	4,344,345	4,354,252	4,361,602
4,272,511	4,346,481	4,354,305	4,361,779
4,272,600	4,347,745	4,355,118	4,361,877
4,276,161	4,348,296	4,355,230	4,362,106
4,279,287	4,348,601	4,355,245	4,362,310
4,281,706	4,349,433	4,355,910	4,362,364
4,295,979	4,349,542	4,355,982	4,362,854
4,302,721	4,349,789	4,356,088	4,362,944
4,304,448	4,349,875	4,356,171	4,363,202
4,306,077	4,349,905	4,356,697	4,363,308
4,307,113	4,350,254	4,356,849	4,363,347
4,308,382	4,350,267	4,357,072	4,363,465
4,312,825	4,350,428	4,357,081	4,363,824
4,312,850	4,350,707	4,357,368	4,364,026
4,316,093	4,351,235	4,357,629	4,364,028
4,321,180	4,351,932	4,357,938	4,364,045
4,324,636	4,352,050	4,358,593	4,364,131
4,325,018	4,352,375	4,359,841	4,364,190

Disclaimers

3,234,021.—*Andre K. Schwerin,* deceased, late of Binghamton, N.Y. by *Johanna Schwerin,* administratrix, Binghamton, N.Y., and *Steven Levinos,* Vestal, and *Fritz W. H. Mueller,* Binghamton, N.Y. PHOTOCOPYING AND TRANSFER PROCESS INVOLVING PHOTOPOLYMERIZATION. Patent dated Feb. 8, 1966. Disclaimer filed Sept. 30, 1982, by the assignee, *Eastman Kodak Co.*

Hereby enters this disclaimer to all claims of said patent.

3,341,328.—*Andre K. Schwerin,* deceased, late of Binghamton, N.Y., by *Johanna Schwerin,* administratrix, Binghamton, N.Y., and *Edward Cerwonka,* Binghamton, N.Y. PHOTOPOLYMERIZATION SYSTEM USING CERIC SALTS. Patent dated Sept. 12, 1967. Disclaimer filed Sept. 30, 1982, by the assignee, *Eastman Kodak Co.*

Hereby enters this disclaimer to all claims of said patent.

3,490,910.—*Emil B. Rauch* and *Robert T. Shannahan,* Binghamton, and *Arthur Krieger,* Rochester, N.Y. SILVER HALIDE EMULSIONS SENSITIZED WITH CYANINE DYES CONTAINING A TETRAHYDROBENZOBENZOXAZOLE NUCLEUS. Patent dated Jan. 20, 1970. Disclaimer filed Sept. 30, 1982, by the assignee, *Eastman Kodak Co.*

Hereby enters this disclaimer to all claims of said patent.

3,515,488.—*Robert W. Houser,* Vestal, N.Y. FILM EXAMINING APPARATUS FOR DETECTING FLAWS IN A CONTINUOUSLY MOVING FILM WEB IN WHICH A DELAY CIRCUIT IS USED TO PERMIT DERIVING BOTH THE BLANKING SIGNAL AND THE INSPECTION SIGNAL FROM A SINGLE LIGHT SOURCE. Patent dated June 2, 1970, Disclaimer filed Sept. 30, 1982, by the assignee, *Eastman Kodak Co.*

Hereby enters this disclaimer to all claims of said patent.

3,989,529.—*Felix Viro,* Apalachin, N.Y., and *Salvatore Emmi,* Portland, Ore. HYDROPHILIC COUPLER SOLUTIONS. Patent dated Nov. 2, 1976. Disclaimer filed Sept. 30, 1982, by the assignee, *Eastman Kodak Co.*

Hereby enters this disclaimer to all claims of said patent.

4,008,042.—*Harvey S. Auvil,* Ashland; and *Rufus F. Davis, Jr.,* Kenwood, Ky. COAL HEATING TEMPERATURE CONTROL. Patent dated Feb. 15, 1977. Disclaimer filed Dec. 13, 1982, by the assignee, *Krupp Wilputte Corp.*

Hereby enters this disclaimer to claims 1 through 10 and 14 and 15 of said patent.

4,158,521.—*Robert W. Anderson,* Fort Worth, and *Bob G. Kannenberg,* Arlington, Tex. METHOD OF STABILIZING CLAY FORMATIONS. Patent dated June 19, 1979. Disclaimer filed Dec. 7, 1982, by the assignee, *The Western Co. of North America.*

Hereby enters this disclaimer to claims 1, 2, 3, 4 and 9 of said patent.

4,205,780.—*Emmett R. Burns,* Danville; *Morris D. Ho,* Walnut Creek, Calif. DOCUMENT PROCESSING SYSTEM AND METHOD. Patent dated June 3, 1980. Disclaimer filed Nov. 22, 1982, by the assignee, *ROI Consulting, Inc.*

Hereby enters this disclaimer to claims 6, 10, 11, 16, 17, 18, and 20 of said patent.

4,259,848.—*Carl A. Voigt,* Nampa, Idaho. REFRIGERATION SYSTEM. Patent dated Apr. 7, 1981. Disclaimer filed Dec. 13, 1982, by the inventor.

Hereby enters this disclaimer to claims 7, 9 and 12 of said patent.

Dedication

3,948,248.—*Joel L. Zuckerman,* West Hartford, and *Harry J. Grossman,* West Willington, Conn. METHOD OF MEASURING OCULAR PULSE. Patent dated Apr. 6, 1976. Dedication filed Aug. 12, 1981, by the assignee, *University of Connecticut.*

Hereby dedicates to the Public the remaining term of said patent.

Disclaimer and Dedication

Re. 29,059.—*James W. Kack* and *Terry W. Mowbray,* Boulder, Colo. METHOD OF MANUFACTURE OF DOWN INSULATED GOODS. Patent dated Dec. 7, 1976. Disclaimer and Dedication filed June 22, 1982, by the assignee, *Mountaineering, Ltd.*

Hereby disclaims and dedicates to the Public the entire term of said patent.

Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

The libraries listed herein, designated as patent depository libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent months or years in some libraries to all or most of the patents issued since 1870, or earlier, in other libraries.

These patent collections are open to public use and each of the patent depository libraries, in addition, offers the publications of the patent classification system (e.g. The Manual of Classification, Index to the U.S. Patent Classification, Classification Definitions, etc.) and provides technical staff assistance in their use to aid the public in gaining effective access to information contained in patents. With one exception, as noted in the table following, the collections are organized in patent number sequence.

Depending upon the library, the patents may be available in microfilm, in bound volumes of paper copies, or in some combination of both. Facilities for making paper copies from either microfilm in reader-printers or from the bound volumes in paper-to-paper copies are generally provided for a fee.

Owing to variations in the scope of patent collections among the patent depository libraries and in their hours of service to the public, anyone contemplating use of the patents at a particular library is advised to contact that library, in advance, about its collection and hours, so as to avert possible inconvenience.

State	*Name of Library*	*Telephone Contact*
Alabama	Birmingham Public Library	(205) 254-2555
Arizona	Tempe: Science Library, Arizona State University	(602) 965-7607
California	Los Angeles Public Library	(213) 626-7555 Ext. 273
	Sacramento: California State Library	(916) 322-4572
	Sunnyvale: Patent Information Clearinghouse*	(408) 738-5580
Colorado	Denver Public Library	(303) 571-2122
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Minnesota	Minneapolis Public Library & Information Center	(612) 372-6552
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 214, Ext. 215
Nebraska	Lincoln: University of Nebraska-Lincoln, Engineering Library	(402) 472-3411
New Hampshire	Durham: University of New Hampshire Library	(603) 862-1777
New Jersey	Newark Public Library	(201) 733-7814
New York	Albany: New York State Library	(518) 474-5125
	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
	New York Public Library (The Research Libraries)	(212) 930-0850
North Carolina	Raleigh: D. H. Hill Library, N.C. State University	(919) 737-3280
Ohio	Cincinnati & Hamilton County, Public Library of	(513) 369-6936
	Cleveland Public Library	(216) 523-2870
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 255-7055 Ext. 212
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
Pennsylvania	Philadelphia: Franklin Institute Library	(215) 448-1321**
	Pittsburgh: Carnegie Library of Pittsburgh	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
Rhode Island	Providence Public Library	(401) 521-7722 Ext. 226
South Carolina	Charleston: Medical University of South Carolina	(803) 792-2372
Tennessee	Memphis & Shelby County Public Library and Information Center	(901) 528-2957
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	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
Wisconsin	Madison: Kurt F. Wendt Engineering Library, University of Wisconsin	(608) 262-6845
	Milwaukee Public Library	(414) 278-3043

All of the above-listed libraries, except the Cleveland Public Library, offer CASSIS (Classification And Search Support Information System), which provides direct, on-line access to Patent and Trademark Office data.

*Collection organized by subject matter.

**Call only between the hours of 10:00 a.m. and 5:00 p.m.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF December 25, 1982

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—D. E. TALBERT, Director ..... Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metallurgical Apparatus; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	11-12-80
GENERAL ORGANIC CHEMISTRY, GROUP 120—C. E. VAN HORN, Director ..... Heterocyclic Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	8-06-81
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—J. O. THOMAS, JR., Director .... Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g., Coating; Molding; Ink; Prosthdontics; Adhesive and Abrading Compositions; Molding, Shaping, Treating Process, and Apparatus Therefor; Irradiation (Part); Bleaching; Dyeing; Leather, Fur and Textile Treating Compositions.	12-31-81
COATING, LAMINATING AND PHOTOGRAPHY, GROUP 160—S. N. ZAHARNA, Director ..... Coating: Processes, Apparatus and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; and Photography.	1-15-82
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. F. WHITE, Director ..... Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	10-30-81
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—S. W. ENGLE, Director Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Horology; Acoustics; Recorders; Weighing Scales.	2-13-81
SPECIAL LAWS ADMINISTRATION, GROUP 220—KENNETH L. CAGE, Director ..... Ordnance, Firearms and Ammunition; Lubrication; Illumination; Nuclear Reactors; Acoustics, Communications, Optics; Radar; Directional Radio; Torpedoes; Seismic Exploring; Cathode Ray Tube Circuitry; Cryptography; Laser Devices; Radioactive Materials; Powder Metallurgy, Rocket Fuels; Special, Fuel, Explosive and Thermic Compositions; Thermal and Photoelectric Batteries.	3-20-81
INFORMATION TRANSMISSION, STORAGE, AND RETRIEVAL, GROUP 230—EARL LEVY, Director ..... Communications; Multiplexing Techniques; Television; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	11-24-80
RECEPTACLES, CLEANING, WINDING, AND MEASURING, GROUP 240—G. M. FORLENZA, Director ..... Receptacles; Bearings; Joint Packing; Conduits; Switches; Presses; Plumbing Fixtures; Textile Spinning; Cleaning; Food Treating; Agitating; Centrifugal Separating; Geometrical Instruments; Sound Recording; Image Projectors; Web Feeding; Winding and Reeling; Cable Hoists; Measuring and Testing; Indicating; Fluent Material Handling; Shaft; Impellers; Rotary Fluid Motors.	1-09-81
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—S. S. MATTHEWS, Director ..... Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	11-26-79
DESIGN, GROUP 290—KENNETH L. CAGE, Director ..... Industrial Arts; Household, Personal and Fine Arts.	1-05-81
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—B. R. GRAY, Director ..... Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	2-26-81
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—M. M. NEWMAN, Director ... Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion-Bonding, Metal Founding; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks; Fishing, Etc.; Butchering; and Books and Printed Matter.	4-20-81
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—R. E. AEGERTER, Director ..... Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Plants; Harvesting; Earth Working and Excavating; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Information Dissemination.	2-13-80
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—D. J. STOCKING, Director ..... Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Couplings; Gearing; Fluid Handling and Control; Lubrication.	11-17-80
GENERAL CONSTRUCTIONS, TEXTILES, MINING AND GEARING, GROUP 350—A. L. SMITH, Director ..... Building Structures; Racks; Cabinets; Closures; Supports; Furniture; Fasteners; Locks; Pipe Couplings; Joints; Miscellaneous Hardware; Textiles; Sewing Machines; Apparel; Footwear; Earth Engineering; Earth Drilling; Mining; Wells; Roads; Bridges; Tool Driving; Gearing; Machine Elements; Clutches.	9-17-80

Expiration of patents: The patents within the range of numbers indicated below expire during December 1982, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents ..... Numbers 3,221,339 to 3,226,728, inclusive

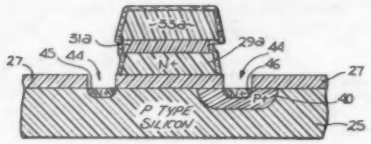
Plant Patents ..... Numbers 2,577 to 2,584 inclusive

REEXAMINATIONS

March 8, 1983

Matter enclosed in heavy brackets [ ] appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination.

B1 4,142,926 (56th)
SELF-ALIGNING DOUBLE POLYCRYSTALLINE SILICON ETCHING PROCESS
William L. Morgan, Sunnyvale, Calif., assignor to Intel Corporation, Santa Clara, Calif.
Reexamination Request No. 90/000,008, Jul. 1, 1981.
Reexamination Certificate for Patent No. 4,142,926, issued Mar. 6, 1979, Ser. No. 914,624, Jun. 12, 1978.
U.S. Cl. 148/187 **Int. Cl.³ H01L 21/22.**



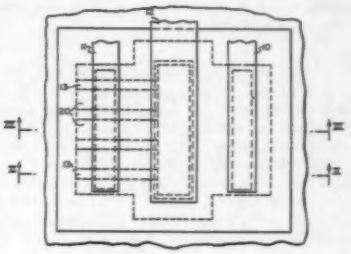
AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims 1–12 is confirmed.

1. A process for fabricating an MOS, double polycrystalline integrated circuit structure at a predetermined area of a silicon substrate comprising the steps of:
- forming a continous first silicon oxide layer on said substrate covering at least said area;
- forming a doped first polycrystalline silicon layer on said first oxide layer such that said first silicon layer is insulated from said substrate at said area;
- forming a second oxide layer on said doped first silicon layer;
- forming a second polycrystalline silicon layer on said second oxide layer;
- etching said second silicon layer and said second oxide layer above said area to form a structure having a predetermined pattern;
- subjecting said doped first silicon layer and said structure to an etchant which discriminates between said doped first silicon layer and said second silicon layer employing said structure as a mask;
- whereby a double polycrystalline silicon structure is formed on said substrate at said area.

9. A process for fabricating an MOS floating gate memory device at a predetermined area on a silicon substrate, said substrate including a first continuous silicon oxide layer covering at least said area and a first polycrystalline silicon layer disposed on said first silicon oxide layer such that said first polycrystalline silicon layer is insulated from said substrate at said area comprising the steps of:
- doping a said first polycrystalline silicon layer;
- forming a second oxide layer on said first silicon layer;
- forming a second silicon layer on said second oxide layer;
- fabricating a gate masking member at said area on said second silicon layer;
- etching said second silicon layer to form an upper gate;
- removing exposed portions of said second oxide layer;
- and, subjecting said first and second silicon layers to an etchant which discriminates between said doped first silicon layer and said second silicon layer so as to etch only said first silicon layer to form a lower gate;
- whereby said upper gate acts as a mask during the etching of said lower gate, thereby assuring that said lower gate is in alignment with said upper gate.

B1 4,053,916 (57th)
SILCON ON SAPPHIRE MOS TRANSISTOR
James R. Cricchi, Catonsville; Michael D. Fitzpatrick, Glen Burnie, both of Md., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.
Reexamination Request No. 90/000,159, Feb. 16, 1982.
Reexamination Certificate for Patent No. 4,053,916, issued Oct. 11, 1977, Ser. No. 610,493, Sep. 4, 1975.
U.S. Cl. 357/23 **Int. Cl.³ H01L 27/12.**



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claim 4 is confirmed.

Claims 1–3 are determined to be patentable as amended:

Claims 5–10, dependent on amended claims, are determined to be patentable.

1. A planar transistor comprising
- a. a semiconductive structure including:
  1. a channel region of a first conductivity type interposed between drain and source regions of a second conductivity type,
  2. at least one high conductivity region of said first conductivity type contiguous to said source and channel regions;
- b. an insulating layer overlying said channel region;
- c. an electrically conductive layer overlying said insulating layer to form the gate of said transistor;
- d. electrically conductive means electrically coupled to said drain region to form the drain terminal of said transistor; and
- e. electrically conductive means [coupled to] *in direct contact with both* said source region and [to] said high conductivity region to form the source terminal of said transistor.

2. A planar MOS transistor having gate, source and drain terminals comprising:
- a. a semiconductive structure including:
  1. drain and source regions of a first conductivity type,
  2. a channel region of second conductivity type interposed between said drain and source regions,
  3. at least one electrically conductive region of said second conductivity type forming a low resistance path to said channel region;
- b. an electrically insulating layer overlying said channel region;
- c. first electrically conductive means overlying said insulating layer to form the gate terminal of said transistor;

d. second electrically conductive means forming an electrically conductive path to said drain region to form said drain terminal;

e. third electrically conductive means [coupled through a low resistance path to] *in direct contact with both* said source region and [to] said at least one electrically conductive region of said second conductivity type to form the source *terminal* of said transistor.

3. A planar MOS transistor having a gate, source and drain terminals, comprising in combination;

a. a semiconductive structure supported on an electrically insulating substrate, said semiconductive structure comprising;

1. drain and source regions of a first conductivity type,
2. a channel region of a second conductivity type interposed between said drain and source region,
3. at least one electrically conductivity region of said second conductivity type forming a low resistance path to said channel region;

b. an electrically insulating layer overlying said channel region;

c. first electrically conductive means overlying said insulating layer to form said gate terminal;

d. second electrically conductive means coupled through a low resistance path to said drain region to form the drain terminal [by] *of* said transistor; and

e. third electrically conductive means [coupled through a low resistance path to] *in direct contact with both* said source region and [to] said at least one electrically conductive region of said second conductivity type to form the source terminal of said transistor.

B1 4,209,438 (58th)

ELECTRICAL INSULATING COATING COMPOSITION

Yasunori Okada; Junzo Fukuhara, both of Hitachi, Japan, assignors to Hitachi Chemical Company, Ltd., Japan.

Reexamination Request No. 90/000,187, Apr. 7, 1982.
Reexamination Certificate for Patent No. 4,209,438, issued Jun. 24, 1980, Ser. No. 959,503, Nov. 13, 1978.
U.S. Cl. 524/314 **Int. Cl.³ C08K 5/11.**

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims 1–7 is confirmed.

1. An electrical insulating coating composition which comprises a resin prepared by reacting one or more polyvalent carboxylic acids or their derivatives with one or more polyhydric alcohols in which trihydric or higher polyhydric alcohols are used in an amount of 35% by equivalent or more based on the total hydroxyl group equivalent of the polyhydric alcohols, and as a solvent for said resin one or more carboxylic acid esters of the formula:

$$R_1OOCR_2COOR_3$$

wherein R_1 and R_3 are independently a lower alkyl group; and R_2 is $-(CH_2)_m-$ wherein m is an integer from 1 to 10.

REISSUES

MARCH 8, 1983

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

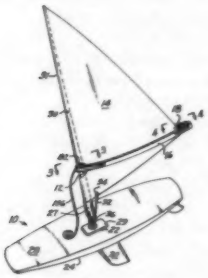
Re. 31,167
WIND-PROPELLED APPARATUS

Henry H. Schweitzer, Pacific Palisades, and James R. Drake, Santa Monica, both of Calif., assignors to Windsurfing International, Inc., Torrance, Calif.

Original No. 3,487,800, dated Jan. 6, 1970, Ser. No. 716,547, Mar. 27, 1968. Application for reissue May 30, 1978, Ser. No. 910,564

Int. Cl.³ B63B *15/02;* **B63C** *7/00;* **B63H** *9/04, 9/10*

U.S. Cl. 114—39 **7 Claims**



15. Wind-propelled apparatus comprising body means adapted to support a user and wind-propulsion means pivotally associated with said body means and adapted to receive wind for motive power for said apparatus, said propulsion means comprising a mast, a joint for mounting said mast on said body means, a sail and means for extending said sail laterally from said mast comprising two opposed booms secured to said mast for guiding said sail therebetween and adapted to provide a hand-hold for said user on either side of said sail while sailing, the position of said propulsion means being controllable by said user, said propulsion means being substantially free from pivotal restraint in the absence of said user, said joint having a plurality of axes of rotation whereby said sail free falls along any of a plurality of vertical planes upon release by said user.

16. The apparatus of claim 15 adapted as a watercraft.

17. The apparatus of claim 16 including water stabilizing means associated with said body means.

Re. 31,168
WEAR RING FOR SPRING OF FRICTION COUPLING

Richard L. Hedgcock, East Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Original No. 4,121,705, dated Oct. 24, 1978, Ser. No. 820,175, Jul. 29, 1977. Application for reissue Dec. 17, 1979, Ser. No. 104,329

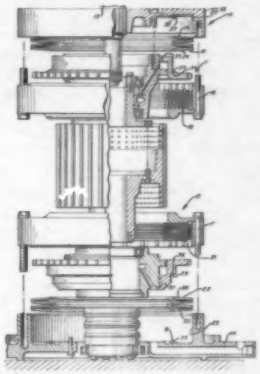
Int. Cl.³ F16D *13/44*

U.S. Cl. 192—89 B **20 Claims**

1. In a power drive assembly having a housing, a drive mechanism removably installed in said housing, and an annular biasing spring installed in said housing for biasing said mechanism, an improved wear ring arrangement comprising:

means on said mechanism defining an undercut annular groove opening coaxially toward an end of the biasing spring; and

a *split* wear ring removably installed in said groove to engage said end of the biasing spring in the assembled arrangement of the power drive assembly, said wear ring having a cross section complementary to the undercut groove cross section whereby the mechanism may be installed in the housing with the groove opening downwardly and the wear ring maintained therein to removably engage said end of the biasing spring.



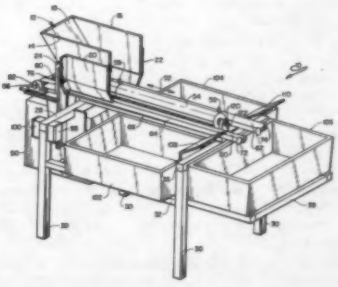
Re. 31,169
SORTING SYSTEM AND APPARATUS

Robert G. Holmes, Columbus, Ohio, assignor to Ohio Agricultural Research & Development Center, Wooster, Ohio

Original No. 4,116,339, dated Sep. 26, 1978, Ser. No. 778,794, Mar. 17, 1977. Application for reissue Jan. 5, 1980, Ser. No. 156,600

Int. Cl.³ B07C *1/00*

U.S. Cl. 209—699 **51 Claims**



1. Sorting apparatus for objects exhibiting identifiable dynamic response to vibrational phenomena comprising:

means for introducing a quantity of said objects at the entrance location of a sorting zone extending along a given longitudinal axis;

means defining an oscillatory surface within said zone and extending along said longitudinal axis;

drive means including a dynamically balanced rotative drive member actuable to impart oscillation of predetermined frequency and amplitude characteristics to said oscillatory surface;

transporter means including a conveyer surface within said zone extending from said entrance location in parallel

relationship with said longitudinal axis and adjacent said oscillatory surface for sequentially moving said objects within said zone in orientations promoting the kinetic reaction thereof with said oscillatory surface;

means adjacent said zone for receiving reacted said objects exhibiting predetermined dynamic response characteristics to said kinetic reaction; and

means for simultaneously actuating said drive means and said transporter means.

Re. 31,170

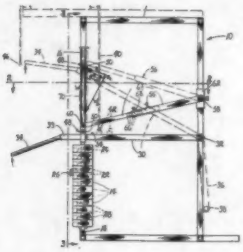
VARIABLE RESISTANCE EXERCISING DEVICE

Martin S. Mazman, 945 S. Clovis Ave., Fresno, Calif. 93727

Original No. 3,905,599, dated Sep. 16, 1975, Ser. No. 375,107, Jun. 29, 1973. Application for reissue Apr. 21, 1980, Ser. No. 139,373

Int. Cl.[3] **A63B** *21/06, 21/20*

U.S. Cl. 272—118 **21 Claims**



3. An exercise device [as described in claim 2, in which] *comprising:*

a frame;

a lever arm pivotally mounted in said frame at a lever arm pivot and pivotally movable by a user through an exercise cycle;

user contact means interconnected with said lever arm for applying pivotal movement force thereto;

resistance means interconnected with said frame; and an interconnection mechanism interconnecting said resistance means to said lever arm at a lever arm connecting point disposed in spaced relation with said lever arm pivot, said interconnection mechanism having movement means movable in response to pivotal movement of said lever arm to vary the spaced relationship between said lever arm connecting point and said lever arm pivot;

wherein said interconnection mechanism movement means includes a yoke connected to said resistance means and disposed about a portion of said lever arm, and a yoke roller interconnected with said yoke and disposed to travel longitudinally along said lever arm during pivotal movement thereof;

guide means interconnected with said frame and disposed to direct the path of movement of said movement means; and wherein

said lever arm has a non-linear contoured surface path; and

said roller of said interconnection mechanism travels along said path on said lever arm.

7. An exercise device [as described in claim 5, in which] *comprising:*

a frame;

a lever arm pivotally mounted in said frame at a lever arm pivot and pivotally movable by a user through an exercise cycle;

user contact means interconnected with said lever arm for applying pivotal movement force thereto;

resistance means interconnected with said frame; and an interconnection mechanism interconnecting said resistance means to said lever arm at a lever arm connecting point disposed in spaced relationship with said lever arm pivot, said interconnection mechanism having movement means movable in response to pivotal movement of said lever arm to vary the spaced relationship between said lever arm connecting point and said lever arm pivot, and guide means interconnected with said frame and disposed to direct the path of movement of said movement means;

said interconnection mechanism guide means defining a substantially linear path disposed in intersecting relationship with the longitudinal axis of said lever arm at all positions of said lever arm during its pivotal movement through said exercise cycle, and engageable by said movement means to guide said lever arm connecting point along a predetermined path during movement of said lever arm; and wherein

said guide means of said interconnection mechanism includes a guide arm having a proximal end pivotally mounted to said frame in spaced relationship with said lever arm pivot and a distal end interconnected with said movement means of said interconnection mechanism.

9. An exercise device comprising:

a frame;

resistance means mounted to said frame;

a lever arm mounted in said frame *and movable about a pivot axis fixed relative to the lever arm and the frame;*

user contact means interconnected with said lever arm and disposed to move said lever arm in said frame;

coupling means interconnecting said resistance means and said lever arm, said coupling means includes movement means movable in response to movement of said lever arm to vary the point of interconnection between said resistance means and said lever arm; and

guide means interconnected with said frame and disposed to engage and guide the movement of said coupling means along a path adapted to vary the manner in which said resistance of said resistance means is levered and vectored to resist movement of said lever arm.

21. An exercise device comprising:

a frame defining a base, upright post means and a pivot shaft having a substantially horizontal pivot axis attached to the frame and horizontally spaced from the post means;

a lever arm mounted in the frame and engaging the pivot for pivotal movement about the pivot axis, the lever arm being fixed against longitudinal movement with respect to the pivot axis, the lever arm extending in a direction transverse to the post means from the axis past the post means and terminating in handle means disposed on a side of the post means opposite the pivot axis;

a weight movable along the post means;

a mechanism for connecting the weight to the lever arm and including means movably mounting the mechanism for movement relative to the frame parallel to the post means, the mechanism including movement means engaging the lever arm and applying the weight to the lever arm at a point located intermediate the pivot axis and the handle means, the movement means including means permitting relative motion between the lever arm and the mechanism for shifting the location of the point along the lever arm when the lever arm pivots about the axis;

and guide means interconnected with the frame and disposed to direct the path of movement of the mechanism;

so that a user can pivot the handle means and the lever arm about the pivot axis between a first position and a second position during an exercising cycle by applying a corresponding exercise force to the handle means, the pivotal movement of the lever arm resulting in an increase of the exercise force during one portion of the exercising cycle and a corresponding decrease of the exercise force during a second portion of the exercising cycle to move the weight along the post means.

Re. 31,171

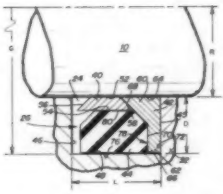
HYDRAULIC PISTON ROD SEAL

Robert G. Brent, Arlington, Tex., assignor to Textron, Inc., Providence, R.I.

Original No. 4,239,244, dated Dec. 16, 1980, Ser. No. 910,008, May 26, 1978. Application for reissue Nov. 19, 1981, Ser. No. 322,910

Int. Cl.³ F16J 9/16

U.S. Cl. 277—188 R 21 Claims



1. In a hydraulic cylinder, a three-part seal to be fixed in a gland formed on the first of two mating cylindrical structures, said gland having a bottom wall confronting the second cylindrical structure, wherein fluid under pressure is to be contained forward of said gland comprising:

(a) a continuous nondeformable bearing ring in said gland having a cylindrical surface for contact with the surface of the second of said cylindrical structures and having an annular surface facing away from said second of said cylindrical structures and having a conical rearward facing end surface diverging outwardly from said first cylindrical surface;

(b) a continuous nondeformable backup seal ring having a forward facing conical end surface mating with the rearward facing conical end surface of said bearing ring; and

(c) a continuous compressible resilient ring in said gland on the side of said bearing ring opposite said second cylindrical structure contacting the bearing ring, the seal ring and gland bottom wall whereby pressure on said resilient ring transmits pressure to said bearing ring and backup seal ring to engage said rings against the second cylindrical structure.

Re. 31,172

SOUND SYNTHESIZING APPARATUS

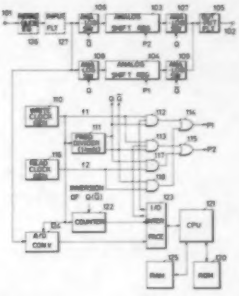
Satoshi Nishimura, Kagamigahara; Kenichi Sato, and Youji Sugiura, both of Gifu, all of Japan, assignors to Sanyo Electric Co., Ltd., Moriguchi, Japan

Original No. 4,210,781, dated Jul. 1, 1980, Ser. No. 967,717, Dec. 8, 1978. Application for reissue Aug. 31, 1981, Ser. No. 297,831

Claims priority, application Japan, Dec. 16, 1977, 52-153275; Dec. 16, 1977, 52-153276; Feb. 13, 1978, 53-16046; Mar. 20, 1978, 53-33492; Apr. 20, 1978, 53-48872

Int. Cl.³ G10L 1/00

U.S. Cl. 179—15.55 T 71 Claims



63. A sound synthesizing apparatus comprising:

means for providing a sound signal,

means for providing a signal representing a predetermined sampling period,

storage means,

means for providing a write clock signal having a first frequency,

means for providing a read clock signal having a second frequency,

control means responsive to said sampling period representing signal and said write clock signal for writing in said storage means said sound signal as a succession of sound elements, each determined by said sampling period representing signal, and responsive to said read clock signal for reading said sound elements in succession from said storage means,

means for joining said sound elements read from said storage means in succession at a junction therebetween for synthesization of a reproduced sound,

means responsive to said write clock signal for providing first data concerning the waveform of a preceding sound element being stored in said storage means and second data concerning the waveform of a succeeding sound element being stored in said storage means following said preceding sound element,

means responsive to said first data and said second data for evaluating a phase relation between the waveforms of said preceding and succeeding sound elements for providing closer similarity of said waveforms of said preceding and succeeding sound elements in the vicinity of said junction between said preceding and succeeding sound elements, and

means responsive to said phase relation evaluating means for controlling a phase relation between said preceding and succeeding sound elements for joining said preceding and succeeding sound elements with closer similarity of waveforms of said preceding and succeeding sound elements in the vicinity of said junction between said preceding and succeeding sound elements.

PLANT PATENTS

GRANTED MARCH 8, 1983

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

4,988

STRAWBERRY PLANT

Harold A. Johnson, Jr., Watsonville, Calif., assignor to Driscoll Strawberry Associates, Inc., Watsonville, Calif.

Filed Jul. 20, 1981, Ser. No. 284,919

Int. Cl.[3] A01H *5/03*

U.S. Cl. Plt.—49 **1 Claim**

1. The new and distinct strawberry plant herein described and illustrated, and identified by the characteristics enumerated above.

4,989

SUGAR HACKBERRY TREE NAMED ALL SEASONS

Willet N. Wandell, Myra Station Rd., Rte. 3, Box 158, Urbana, Ill. 61801

Filed Mar. 18, 1981, Ser. No. 245,155

Int. Cl.[3] A01H *5/00*

U.S. Cl. Plt.—51 **1 Claim**

1. A new and distinct variety of sugar hackberry tree, substantially as herein shown and described, characterized by its rapid growth having a profusion of lateral branches and leaves with a heavier and well balanced crown with a heavier branch density, its very hardy growth habit showing hardiness at below −20° F., freedom from Witches Broom twig disease, and having less and heavier twig diameter.

PATENTS

GRANTED MAR. 8, 1983

ERRATA

For CLASS	See PATENT NO.
604–097	4,375,811
604–008	4,375,816
494–040	4,375,870
494–041	4,375,871
493–158	4,375,969
493–337	4,375,970
493–442	4,375,971
436–513	4,376,110
252–333	4,376,190
235–380	4,376,279

PATENTS

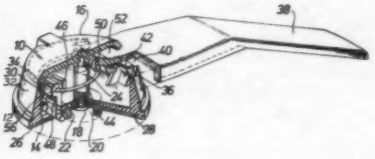
GRANTED MARCH 8, 1983

GENERAL AND MECHANICAL

4,375,702
DEVICE FOR MOUNTING AN EARMUFF ON A HELMET

Tord R. Lundin, Billesholm, Sweden, assignor to Gullfiber AB, Billesholm, Sweden

Filed Jun. 17, 1981, Ser. No. 274,522
Claims priority, application Sweden, Jun. 23, 1980, 8004624
Int. Cl.³ A42B *3/00, 1/24*
U.S. Cl. 2—423 **9 Claims**



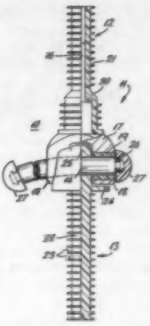
1. An attachment device including a bearing housing **(10)** designed for mounting on a helmet, and an arm **(38)** which projects through an opening **(40)** in the housing, is supported by means of an arm support **(42)** therein, and serves to carry, at the end opposite the housing, an earmuff to be moved manually with a rocking motion between a stationary rest position and a position wherein the earmuff exerts a given desired pressure around the wearer's ear, characterized in that a separate spring component **(44)** at two opposite sides thereof is pivotally mounted at its periphery partly in a spring support **(48)**, which is adjustably mounted in the housing and which remains stationary during the rocking motion of the arm, and partly in the inner end **(52)** of the arm **(38)** that is located inside the housing, said spring being prestressed or biased between said spring support and said inner end, thus exerting upon said inner end of the arm a force directed away from the spring support **(48)** for the purpose of stabilizing the arm in its two positions.

4,375,703
ENDOPROSTHETIC BONE JOINT DEVICES

David M. Evans, Farnham Common, and Barry O. Weightman, Thames Ditton, both of England, assignors to National Research Development Corporation, London, England

PCT No. PCT/GB80/00127, § 371 Date Apr. 15, 1981, § 102(e) Date Apr. 15, 1981, PCT Pub. No. W081/00511, PCT Pub. Date Mar. 5, 1981
PCT Filed Aug. 12, 1980, Ser. No. 253,513
Claims priority, application United Kingdom, Aug. 17, 1979, 7928802
Int. Cl.³ A61F *1/04, 5/04*
U.S. Cl. 3—1.91 **13 Claims**

1. An endoprosthetic MCP joint assembly **(10)** comprising a plurality of devices **(11)** which each include a pair of phalangeal and metacarpal components **(12, 13)** for respective connection to the bones of an individual MCP joint, and wherein

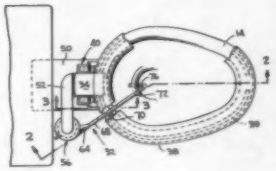


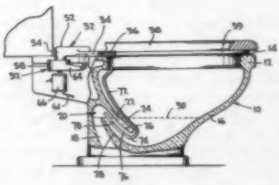
each of said devices include a common pin member **(14)** hingedly connecting the components of each of said devices.

4,375,704
UNITARY ASSEMBLY FOR ATTACHMENT TO A TOILET FOR VENTILATING THE SAME

Donald L. Smith, 452 Nassau, Bolingbrook, Ill. 60439

Continuation of Ser. No. 124,221, Feb. 25, 1980, abandoned. This application Apr. 28, 1982, Ser. No. 372,544
Int. Cl.³ E03D *9/04*; A47K *13/00*
U.S. Cl. 4—213 **2 Claims**

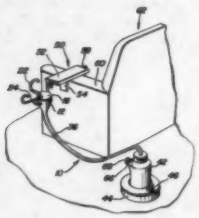




1. For use with a toilet having a bowl provided with a base formed internally with a discharge passage to be connected to a piping for communication with a sewer line and provided with a trap above said passage and with an upper rim on which a seat is adapted to rest with the seat being hinged to the bowl by hinge means between the rear lip of the bowl rim and the seat and with a normal pool of water being in the bowl above the trap so as to provide a water seal to prevent any gases from entering into the bowl from the sewer line; a unitary venting assembly comprising a hollow air scoop having a flat bottom wall adapted to sit on the rear lip of the bowl between the hinge means, means for mounting said scoop on the rear lip with said bottom wall being sealingly engaged with the surface

of the rear lip, said air scoop having an arcuate open front end that conforms with the curvature of the rear of the bowl and communicates with the interior of the bowl so that gases from the bowl flow into the open end of the air scoop which has a closed rear end portion, a hollow duct extending laterally from the rear end portion and through which the bowl gases flow, said duct having an integral outer terminal end portion extending downwardly, a power driven suction blower unit supported by and suspended from the downturned end portion disposed in immediate communication therewith, an electric motor structurally supported by and suspended from the blower unit with the downturned end portion, the blower unit and the motor being serially arrayed in a vertical line, said blower unit having an integral outwardly tapered outlet laterally extending therefrom and having an open outer end, an elongated flexible exhaust tube having an end attached to and communicating with the open outer end of the outlet, said exhaust tube having a flat side to be adhesively affixed to the face of the rear wall of the bowl with the tube having an outer free end portion located within the trap and having its flat face adhesively secured against the walls of the trap said free end portion having an opening in communication with the water in the pool so that a water seal is provided in the free end portion to prevent sewer gases from gaining access thereto.

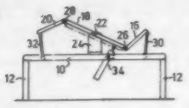
4,375,705
REMOTE STORAGE SPITTOON
Earnest R. Warax, P.O. Box 111, Jacksboro, Tenn. 37757
Filed May 19, 1981, Ser. No. 265,145
Int. Cl.³ A61J *19/00*
U.S. Cl. 4—271 **6 Claims**



1. A remote storage spittoon including an upwardly opening receiver, a flexible conduit including first and second ends and a receptacle, said receiver including a downwardly tapering lower portion opening downwardly into said first end of said conduit, the second end of said conduit opening downwardly into said receptacle, said receptacle including a weighted base removably supported therefrom, a clamp assembly including opposing jaw members relatively mounted for movement toward and away from each other and adapted to rest upon and clampingly engage the arm of an arm equipped piece of seating furniture, means yieldingly biasing said jaw members together, the upper portion of said receiver including hook means supported therefrom, said clamp structure including a portion thereof adapted to be hook engaged by said hook means.

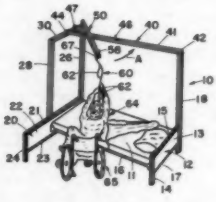
4,375,706
BED BOTTOM
Carl-Axel Finnhult, Listorp, Sweden, assignor to Landstingens Inkopscentral, Lic, Ekonomisk Forening, Solna, Sweden
Filed Dec. 2, 1980, Ser. No. 212,338
Claims priority, application Sweden, Dec. 4, 1979, 7910000
Int. Cl.³ A61G *7/00*
U.S. Cl. 5—61 **2 Claims**

1. A bed bottom which is divided into a longitudinal middle section and two longitudinal side sections, e.g. for carrying a mattress with a person lying on it, the middle section being mounted for pivoting about a longitudinal axis at the centre of the middle section and each of the side sections being articulatedly connected along its inner side edge to the middle section for pivoting about a longitudinal axis at the side edge of the middle section, so that the middle section can be set at different angular positions with the aid of a control means simultaneously as the side sections accomodate this movement by their being pivotally joined to a bed frame, characterized in that each side section is connected at its outer side edge portion



to one end of each of a number of links distributed along the outer side edge of the respective side section, and that the other end of each of the links is pivotably connected to the bed frame, the arrangement being such that when the middle section and the side sections are in one and the same horizontal position, the links extend slopingly upwards and outwards to their articulated connections at the outer side edge portions of the side sections.

4,375,707
INVALID BED
Milton E. Boerigter, Hamilton, Mich., assignor to Fleetwood Furniture Company, Zeeland, Mich.
Filed Feb. 23, 1981, Ser. No. 236,860
Int. Cl.³ A61G *7/10*
U.S. Cl. 5—81 R **20 Claims**



1. An invalid bed comprising:
a support frame for a mattress;
means secured to said frame for defining a horizontally extending support surface extending diagonally from one end of said frame to an opposite end thereof;
a generally horizontally extending pivot arm pivotally anchored at one end to said frame above said means defining a support surface such that said pivot arm is continuously supported by said support surface and is freely moveable thereon, said means defining a support surface being sufficiently above said frame to provide clearance thereunder for an individual; and
gripping means extending from said pivot arm for assisting an individual to move into and out of the bed without assistance by hanging onto said gripping means and swinging into or out of the bed.

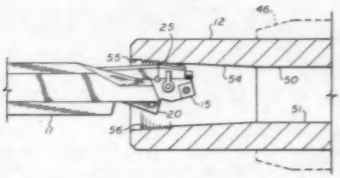
4,375,708
NON-INDEXING MACHINING METHOD AND APPARATUS
Dieter H. Hellnick, and Michael C. Sterioff, both of Houston, Tex., assignors to Jo-Way Tool Company, Inc., Houston, Tex.
Filed Sep. 22, 1980, Ser. No. 189,065
Int. Cl.³ B23B *1/00, 29/26;* B23G *1/22*
U.S. Cl. 10—87 **2 Claims**

1. A method for machining a tubular workpiece to form an

internally threaded coupling having a faced and chamfered end and a tapered and a counterbored interior, which comprises:

(a) forming a tool support bar having a longitudinal axis, a first tool having a face and a cutting edge supported by said tool support bar with said face oriented a first direction, a second tool having a cutting edge supported by said tool support bar with said second tool face oriented in a direction substantially opposite the direction of said first tool face, and a thread cutting tool having a face supported by said tool support bar with said thread cutting tool face oriented in substantially the same direction as said first tool face;

(b) rotating said workpiece in a single direction of rotation throughout steps d-f about the longitudinal axis thereof;



(c) positioning said tool support bar relative to said workpiece such that the axes of said tool support bar and said workpiece lie in one plane and are substantially parallel to each other and said first tool face is directed substantially against the direction of rotation of the exterior surface of said workpiece;

(d) moving said tool support bar in said plane with the axis thereof parallel to the axis of said workpiece to chamfer and face the end of said workpiece with said first tool;

(e) moving said tool support bar in said plane with the axis thereof parallel to the axis of said workpiece to taper and counterbore the interior of said workpiece with said second tool;

(f) and moving said tool support bar in said plane with the axis thereof parallel to the axis of said workpiece to thread the tapered interior of said workpiece.

4,375,709

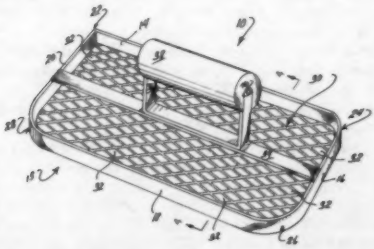
CONCRETE WORKING TOOL

James R. Lewis, 2079 E. 1000, N., LaPorte, Ind. 46350

Filed Dec. 19, 1980, Ser. No. 218,198

Int. Cl.³ E01C *19/12*

U.S. Cl. 15—235.4 **1 Claim**



1. A concrete working tool comprising a body and a handle, said body defined by an open multiple sided enclosed frame, said frame including top and bottom edges, a face part mounted across said frame bottom edge, said face part having a plurality of openings formed therein, a handle connected to said frame and extending above said frame bottom edges, said face part formed of a mesh material, said frame being four sided and of a generally rectangular shape, each corner of said generally rectangularly shaped frame having a contour different from the contour of each other corner whereby said tool may be fitted flush into variously shaped form corners.

4,375,710

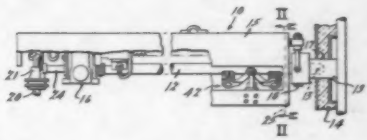
ROLLER SUPPORTING MEANS FOR LONG RETRACTING SOOTBLOWERS

Charles W. Hammond, Lancaster, Ohio, assignor to The Babcock & Wilcox Company, New Orleans, La.

Filed Sep. 10, 1981, Ser. No. 300,933

Int. Cl.³ F23J *3/02*

U.S. Cl. 15—316 R **14 Claims**



1. In a long travel sootblower including a support comprising a beam, a lance tube carried by the beam for simultaneous longitudinal and angular movement to and from a cantilevered position in which it extends from one end of the beam, and roller means carried by the support appurtenant to said end of the beam for supporting the lance tube in said cantilevered position and during its movement to and from such position, the novel combination which comprises:

a cradle assembly including

rocker arm portions pivoted on an axis transverse to the beam and

having end portions spaced lengthwise of the beam from and located on opposite sides of said axis, and

a pair of rollers on each of said end portions of the cradle assembly,

said rollers underlying and rollably engaging the lance tube at a plurality of laterally and longitudinally spaced positions.

4,375,711

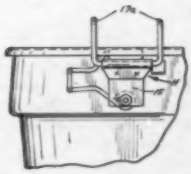
REMOVABLE COVER HINGE FOR FOOD CONTAINERS

Raymond E. Franzen, 12720 Stoneridge Rd.; Eugine W. Good, 12711 Cedarwood Ct., both of Dayton, Minn. 55327, and Richard W. Stone, 15860 Nowthen Blvd., Anoka, Minn. 55303

Filed Feb. 22, 1980, Ser. No. 123,652

Int. Cl.³ A47J *36/12*; E05D *5/02, 7/12*

U.S. Cl. 16—252 **4 Claims**



1. A removable hinge assembly for attaching a cover to an open top container of the type having an outwardly extending rolled flange formed around the open top thereof, whereby the flange forms a generally horizontal portion having top and bottom clamp receiving surfaces, said assembly comprising:

an overlying hook element for clamping engagement with the top clamp-receiving surface of the rolled flange and extending at least partially around the flange,

a mounting plate extending downwardly in fixed relation to

said hook element for positioning on the outside of the container below said flange,

a pivot element connected to said mounting plate below said flange and extending generally perpendicular to said plate,

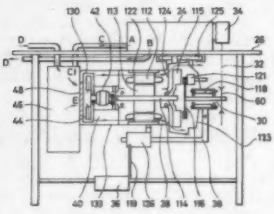
an underlying clamping member pivotally mounted on said pivot element for pivotal movement into and out of clamping position against the bottom clamp-receiving surface of the flange for positively holding said mounting plate on said flange, and

a lid-connecting hinge arm hingedly connected to said mounting plate and having means for connecting the same to a cover for said container to provide a removable hinge connection between the cover and the container.

4,375,712
DUST COLLECTOR FOR INDUSTRIAL SEWING MACHINE

Masahisa Kato, and Syouji Kasugai, both of Nagoya, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 20, 1981, Ser. No. 313,141
Claims priority, application Japan, Oct. 20, 1980, 55/146527
Int. Cl.³ D05B *81/00*
U.S. Cl. 16—282 **6 Claims**



1. A waste collector for an industrial sewing machine, comprising:

a blower motor having a suction inlet;

a first waste collecting box coupled to said suction inlet of said blower motor;

a first suction hose having one end connected to said first waste collecting box and the other end located at said sewing machine for collecting waste;

a second waste collecting box;

a second suction hose having one end connected to said second waste collecting box and the other end located at said sewing machine for collecting waste; and

communicating means for communicating a portion of the suction pressure of said motor to said second box from said first box.

4,375,713
CLASP FOR ADJUSTING BRACELET LENGTH

Stephen F. Bert, Warwick, R.I.; Richard E. Ripley, Attleboro, Mass., and Kurt A. Rieth, Warwick, R.I., assignors to Textron, Inc., Providence, R.I.

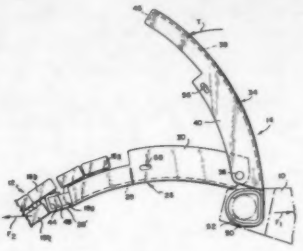
Filed Dec. 22, 1980, Ser. No. 218,345
Int. Cl.³ A44B *11/00*; A44C *5/18*
U.S. Cl. 24—206 R **13 Claims**

1. For use in combination with an expansible linkage bracelet of the type having upper and lower links which are resiliently interconnected and offset in the direction of the bracelet length, a clasp adapted for adjustable and detachable connection to an end portion of the bracelet, comprising:

a casing having a base wall and upturned side walls defining a channel for receiving the bracelet end portion;

a lid having a top wall with downturned side walls, said lid being mounted for pivotal movement relative to said casing between open and closed positions respectively exposing and enclosing said channel; and

engagement means at one end of said clasp, said engagement means including a first end flange on said base wall arranged to protrude upwardly between a selected adjacent pair of the lower links of said bracelet and a second end

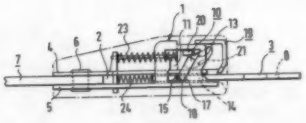


flange on said top wall arranged to protrude downwardly between a selected adjacent pair of the upper links of said bracelet, said first and second end flanges being offset one from the other to accommodate the offset relationship of said upper and lower links when said lid is in the closed position.

4,375,714
RELEASABLE LOCKING MECHANISM FOR SAFETY BELTS

Heinz Korger, Niederstotzingen, Fed. Rep. of Germany, assignor to Carl Stahl GmbH & Co., Herbrechtingen, Fed. Rep. of Germany

Filed Jun. 17, 1980, Ser. No. 160,220
Claims priority, application Fed. Rep. of Germany, Jun. 18, 1979, 2924509; Apr. 28, 1980, 3016327
Int. Cl.³ A44B *11/26*
U.S. Cl. 24—230 AL **28 Claims**



1. A releasable locking mechanism for safety belts comprising: lock tongue means connected with the end of a first belt member; casing means connected with the end of a second belt member; means defining a generally planar slot for receiving said lock tongue means; stop surface means formed on said lock tongue means; support surface means defined on said casing means extending transversely relative to said planar slot; locking bolt means slidably guided on said support surface means and adapted to extend within said planar slot to engage said stop surface means to lock said tongue means relative to said casing means; and a spring-loaded release member adapted to urge said locking bolt means along said support surface means to release said lock tongue means from locking engagement therewith; said stop surface means and said support surface means being arranged to define an acute angle therebetween wherein said support surface means are aligned to extend perpendicularly to an insertion plane of said lock tongue means defined by said planar slot, wherein said locking bolt means are formed with projections having abutment surfaces adapted to engage said stop surface means, and wherein said stop surface means and said abutment surfaces of said projections of said locking bolt means enclose an acute angle with

said insertion plane of said lock tongue means, inclined against the insertion direction of said lock tongue means.

4,375,715

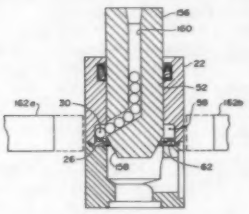
METHOD FOR MAKING SWIVEL FITTING

Hugh H. Dorman, Marshall, Mich., assignor to PATCO, Marshall, Mich.

Division of Ser. No. 971,999, Dec. 21, 1978, Pat. No. 4,299,415. This application Feb. 25, 1981, Ser. No. 239,773

Int. Cl.³ B21K *1/04*; F16L *27/00*

U.S. Cl. 29—148.4 A **10 Claims**



1. A method for making a fluid conducting swivel fitting (20) of the type which comprises a two-piece outer member (22=38+40) having a bore (52) that includes first (54) and second (56) ends and that opens through said outer member (22), having a fluid port (70 or 72) that communicates with said bore (52), having a circumferential ball-receiving recess (58) in said bore (52), being joined at said recess (58), and having a shoulder (62) that extends radially outward from said bore (52) and that comprises an end of said ball-receiving recess (58) distal from said first end (54) of said bore (52), and an inner member (24) being inserted into and rotatable in said bore (52) and having a longitudinal passage (99) therethrough that communicates with said port (70 or 72), which method comprises the following steps in the order recited:

(a) inserting a retaining ring (26) into said recess;

(b) bonding said pieces (38 & 40) of said outer member (22) together;

(c) inserting balls (30) into said recess (58);

(d) holding said balls (30) in said recess (58);

(e) inserting said inner member (24) into said bore (52); and

(f) forcing said inner member (24) inside said retaining ring (26).

4,375,716

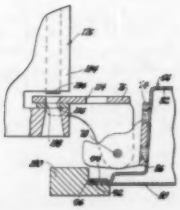
METHOD FOR PRECISE FITTING OF VEHICLE BODY CLOSURE

Joseph Armstrong, Farmington Hills; Robert L. Gordon, Rochester; William R. Walsh, Ortonville, and Jack H. King, Sr., Rochester, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Mar. 3, 1981, Ser. No. 240,174

Int. Cl.³ B23Q *17/00*

U.S. Cl. 29—404 **4 Claims**



1. A method for precise mounting of a vehicle body closure and hinge within a vehicle body opening so that certain adjacent appearance features of the closure and the body are precisely mated when the closure is closed, comprising the steps of:

attaching a first hinge link of the hinge to the closure;

making a net hole in the second hinge link of the attached hinge at a precise location relative a certain appearance surface of the closure; and

installing a fastener between the net hole of the second hinge link and a mating fastener previously provided in the body at a precise location relative a certain appearance feature of the body whereby the closure is mounted on the body with the certain appearance feature of the closure precisely located relative the certain appearance feature of the body.

4,375,717

PROCESS FOR PRODUCING A FIELD-EFFECT TRANSISTOR

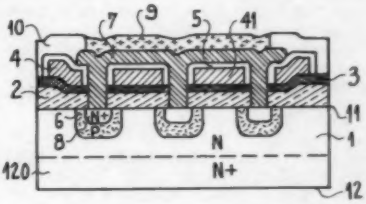
Eugene Tonnel, Paris, France, assignor to Thomson-CSF, Paris, France

Filed Jul. 8, 1980, Ser. No. 167,391

Claims priority, application France, Jul. 10, 1979, 79 17848

Int. Cl.³ H01L *21/26*

U.S. Cl. 29—571 **5 Claims**



1. A process for manufacturing a field-effect transistor of the vertical-operation DMOS type, from a silicon wafer having a first type of conductivity comprising a principal first face and a second face opposite this first face, the zone of the wafer situated in the vicinity of the second face presenting a conductivity of the same type as, and greater than, the conductivity of the wafer, forming the drain of the transistor, comprising the following steps:

forming, by thermal growth, a first silicon oxide layer of given thickness on the first face of the wafer,

forming, on the first silicon oxide layer, a layer of silicon nitride,

depositing, on the silicon nitride layer, a layer of doped polycrystalline silicon and opening this layer by masking and etching to form the grid electrodes of the transistor,

forming implantation zones by ionic implantation of a dopant having a type of conductivity opposite that of the wafer by means of the mask formed by the grid electrodes,

heating so as to develop, from the polycrystalline silicon forming the grid electrodes, a second silicon oxide layer whose thickness is greater than that of the first layer and so as to cause the implanted dopant to diffuse and form in the silicon wafer zones with a type of conductivity opposite that of the wafer,

selectively etching the silicon nitride layer and etching the silicon oxide over a thickness corresponding to that of the first silicon oxide layer so as to bare the wafer,

depositing a second layer of doped polycrystalline silicon having the same type of conductivity as that of the zone of the wafer forming the drain of the transistor,

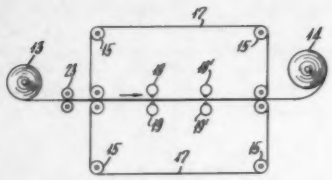
heating to cause the dopant of the second polycrystalline silicon layer to diffuse into the underlying portions of the wafer so as form the source zones of the transistor.

4,375,718

METHOD OF MAKING FIBROUS ELECTRETS

Larry C. Wadsworth, Arlington, Tex., and Solomon P. Hersh, Raleigh, N.C., assignors to Surgikos, Inc., Arlington, Tex.

Filed Mar. 12, 1981, Ser. No. 243,218
Int. Cl.³ B29J *1/00*; H01T *19/00*
U.S. Cl. 29—592 E **17 Claims**



9. A process of applying a permanent electrostatic charge by corona charging to a dielectric fiber web,

joining a contact web, which is more conductive than said dielectric fiber web, to each surface of said dielectric fiber web to form a combined web,

moving the combined web between a first pair of corona discharge elements which are charged with a voltage of from 5 to 25 kV but with the discharge elements having opposite polarity,

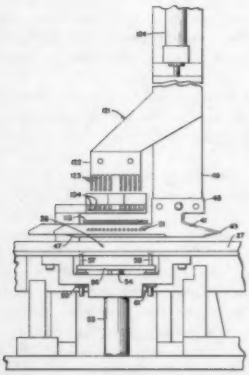
maintaining the combined web in the corona of the corona discharge elements for from 0.01 to 1 seconds to produce a permanent charge on said dielectric fiber web.

4,375,719

APPARATUS FOR ASSEMBLING APERTURED MEMBERS ONTO AN ARRAY OF TERMINAL PINS

William C. Kent, Garland, Tex., assignor to Western Electric Company, Inc., New York, N.Y.

Filed Jan. 26, 1981, Ser. No. 228,540
Int. Cl.³ B23P *19/00*; H01R *43/00*
U.S. Cl. 29—747 **10 Claims**



1. An apparatus for assembling a first member having a coordinate array of holes onto a coordinate array of pins projecting from a second member, which comprises:

a group of spaced blades for receiving columns of pins therebetween;

means for advancing a second member to move the column of pins between said blades;

a group of aligning pins mounted for movement transverse of said blades;

means for moving the aligning pins across said blades to captivate the projecting pins between the blades and the aligning pins;

means for releasably holding a first member above the captivated pins; and

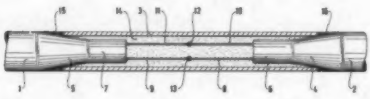
means for pushing the first member from said holding means onto said captivated pins.

4,375,720

METHOD OF END-TO-END CABLE JOINING FOR USE WITH SMALL DIAMETER, ARMORED CABLE HAVING COMPRESSED MINERAL INSULATION

Jean-Claude Bourget, Issy les Moulineaux, France, assignor to Les Cables de Lyon, Lyons, France

Filed Jul. 6, 1981, Ser. No. 280,583
Claims priority, application France, Jul. 4, 1980, 80 14919
Int. Cl.³ H01R *43/00*
U.S. Cl. 29—869 **3 Claims**



1. A method of end-to-end cable joining for use with small diameter, armoured cable having compressed mineral insulation, said method comprising the steps of:

(a) preparing a length of longitudinally slotted tubing made of the same metal as the cable armour sheath, and having a slightly larger outside diameter;

(b) swaging a portion of the sheath of each of the cable ends to be joined to reduce the outside diameter of said portion to less than the inside diameter of said length of tubing, said swaged portions each extending over a distance of slightly less than half the length of said length of slotted tubing;

(c) stripping the ends of the swaged portions of cable;

(d) welding together the ends of corresponding conductors as revealed by step (c);

(e) placing said slotted length of tubing around the ends of the cables as joined by step (d), and temporarily fixing it in place with a few tacking welds;

(f) filling the inside of said slotted tubing via its slot with powdered mineral insulation, thereby reconstituting the mineral insulation of the conductors therein;

(g) radially compressing said longitudinally slotted tubing to bring the edges of the slot together, and closing said slot by welding;

(h) permanently fixing the ends of said tubing to the sheaths of the cables by welding or brazing;

(i) filling in, by brazing, any discontinuities in the outer surface of the joined cables in the vicinity of the ends of said tubing; and

(j) drawing out the cable around the joint to ensure a uniform outside diameter matching the outside diameter of the rest of the cable.

4,375,721

COLLAPSIBLE RESTRAINT FOR MEASURING TAPES

Herbert T. Ueda, Claremont, N.H., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Oct. 29, 1981, Ser. No. 316,205
Int. Cl.³ G01B *3/02, 3/10*
U.S. Cl. 33—137 R **20 Claims**

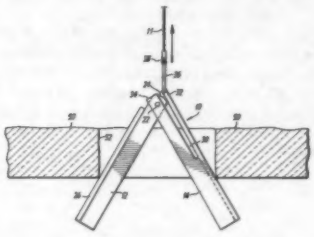
1. A collapsible restraint for attachment to the end of a flexible measuring tape, comprising:

(a) first and second elongated blades, one end of said first blade being pivotally connected to one end of said second blade such that said first and second blades may be pivoted from a fully extended position in which said blades are in

opposed 180° alignment with each other on either side of said pivotal connection to a collapsed position in which the blades form an angle of less than 180° relative to each other;

(b) locking means for locking said first and second blades in the fully extended position, said locking means being disabled in response to a force applied at a point near the pivotally connected ends of said first and second blades to allow said blades to pivot from the fully extended position to a collapsed position, said locking means comprising:

(1) a cam surface formed on the end of the first blade which is pivotally connected to the second blade; and



(2) a resilient arm extending along the second blade and terminating at the end of said second blade which is pivotally connected to said first blade, said resilient arm having a free end portion which is urged into contact with and deflected by the cam surface formed on the end of the first blade as the first and second blades are pivoted relative to each other; and

(c) attachment means for attaching the end of a flexible measuring tape to at least one of said first and second blades at a point near the pivotally connected ends of said first and second blades.

4,375,722

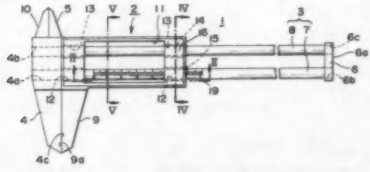
VERNIER CALIPER

Goro Nishikata, and Kozo Shibukawa, both of Kawasaki, Japan, assignors to Kabushiki Kaisha Mitutoyo Seisakusho, Tokyo, Japan

Continuation of Ser. No. 56,609, Jul. 11, 1979, abandoned. This application Dec. 30, 1980, Ser. No. 221,509

Int. Cl.³ G01B 5/02

U.S. Cl. 33—143 M **3 Claims**



1. A vernier caliper comprising

a first measuring jaw;

a rear frame;

a main beam body comprising two round rods parallel to each other and extending between said measuring jaw and said rear frame;

means securing a first end of each round rod to said first measuring jaw;

means securing the other end of each round rod to said rear frame;

a slider having a second measuring jaw; and

means mounting said slider on said two round rods for sliding movement along said rods between said second jaw and said rear frame, and wherein

one of said rods has graduations,

a transparent scale plate with graduations is mounted on the slider so as to face said round rod with graduations, and

a scale groove is formed in said scale plate in opposed relation to said round rod with graduations and extends axially of said rod, said groove having an arch-shaped cross-section, and vernier graduations formed on said scale groove.

4,375,723

CONTACT-SENSING PROBE

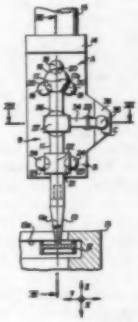
David R. McMurtry, Wotton-under-Edge, England, assignor to Rolls-Royce Limited, London and Renishaw Electrical Ltd., Gloucestershire, both of, England

Division of Ser. No. 31,150, Apr. 18, 1979, Pat. No. 4,301,338, which is a continuation of Ser. No. 727,616, Sep. 28, 1976, abandoned, which is a continuation-in-part of Ser. No. 550,634, Feb. 18, 1975, abandoned, which is a continuation of Ser. No. 398,831, Sep. 19, 1973, abandoned. This application Jun. 23, 1981, Ser. No. 276,540

Claims priority, application United Kingdom, Oct. 4, 1975, 40719

Int. Cl.³ G01B 7/02

U.S. Cl. 33—174 L **2 Claims**



1. A device for mounting a stylus in position-determining apparatus wherein said device and an object are movable relative to each other for providing a signal when said stylus engages said object thereby indicating the position thereof, said device comprising:

a fixed member;

a movable member to which said stylus is connectable and which is supportable on said fixed member at three locations arranged in a plane and at the three corners of a triangle, said members respectively defining at each said location, a supported element and a supporting element confronting the supported element in a direction perpendincular to said plane, at a first said location one of said elements having surface means defining an axisymmetric recess covergent in said direction and the other element being engageable with said recess;

at a second said location one of said elements having second surface means defining a pair of surfaces convergent in said direction and the other element being engageable with said pair of surfaces;

one of the second surface means and the element engageable therewith being shaped to define an axis extending in a direction including the first and second locations;

at the third said location one of the elements having third surface means defining a flat surface parallel to said plane and the other element being engageable with said flat surface, bias means for urging the movable member into contact with the fixed member; and

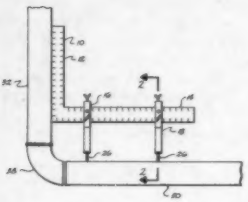
said first, second and third surface means co-operating under the force of the bias means to locate the movable member in a positive rest position on the fixed member, the movable member being removable from the rest position in opposition to the bias means when a force is applied to said stylus and being retrunable to the rest position by said means and surface means on cessation of said force.

4,375,724

PIPE ALIGNING APPARATUS

Jimmy M. Brock, 800 Hwy. 3 South, League City, Tex. 77573

Filed May 26, 1981, Ser. No. 266,797
Int. Cl.³ G01B 3/56
U.S. Cl. 33—180 R 7 Claims



1. Apparatus for use with a square or like tool in angularly aligning first and second pipe sections for welding and joining of said pipe section in a desired angular orientation relative to one another, said tool being the type having a pair of angularly oriented legs, said apparatus comprising:

a pair of gauge devices;

means for slidably mounting said gauge devices to a first leg of said tool in a laterally spaced relation;

each said gauge device including a vertically movable gauge element for engaging said first pipe section in said spaced relation while a second leg of said tool lies against said second pipe section;

each said gauge element being independently movable in a vertical direction to provide a desired independent vertical displacement from the gauge device from which it extends and provides a measurement of said angular orientation; and

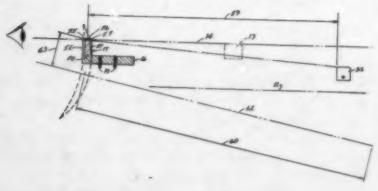
indicia means carried on said gauge elements for indicating angular alignment of said pipe sections relative to one another so that a joint may be formed to fix said first and second pipe sections in said angular orientation.

4,375,725

OPTICAL SIGHT

Douglas A. Orlob, 603 Pearson, Walla Walla, Wash. 99362

Filed Feb. 17, 1981, Ser. No. 235,097
Int. Cl.³ F41G 1/32
U.S. Cl. 33—233 19 Claims



1. An optical sight for a visually aimed device having an operative axis adapted to be directed toward a remote target, comprising:

a front sight member having a viewable rear surface area, said rear surface area having a first visual reference thereon adapted to be offset from the operative axis of the device;

lens means rearwardly of the front sight member for enabling a user to view the front sight member when the device is pointed toward a remote target, the separation between the lens means and rear surface of the front sight member being within the focal length of the lens means;

a second visual reference located on the lens means; the second visual reference being offset from the operative axis of the device by a distance greater than the offset of said first visual reference;

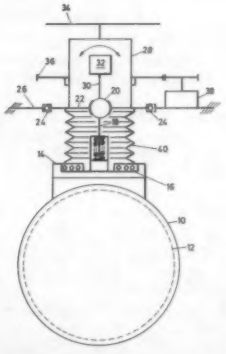
said lens means having positive refractive properties for producing a visual erect and enlarged image of the rear surface of the front sight member along an image line of sight intersecting said second visual reference and offset from the operative axis of the device, whereby the device can be aimed by visually superimposing the image of the first visual reference and a target area as viewed through the lens means with the second visual reference on the lens means.

4,375,726

GYRO COMPASS

Ulf Bey, Heikendorf; Martin Lässig, and Hermann Stötzer, both of Kiel, all of Fed. Rep. of Germany, assignors to Anschutz & Co., GmbH, Kiel, Fed. Rep. of Germany

Filed Jun. 24, 1981, Ser. No. 276,989
Int. Cl.³ G01C 19/38
U.S. Cl. 33—324 5 Claims



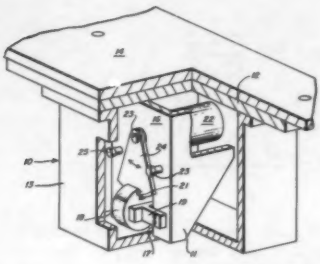
1. In a gyro compass, the direction-indicating gyro system of which is mounted on a rigid pendulum that is suspended intermediate its ends to pivot in all directions from a suspension point on a support which is mounted to rotate about a vertical axis in a frame integral with a ship, and which support is coupled to the gyro system by a bellows surrounding the pendulum adjacent said suspension point, improved suspension means characterized by means connecting said rigid pendulum beneath its suspension point to the gyro system slidably to support said system for movement in translation longitudinally and transversely of said pendulum, and in a sprung manner, and an element arranged on said pendulum above the suspension point, and movable in a damping liquid contained in a tank mounted on said support.

4,375,727

CANT ANGLE SENSOR ASSEMBLY

Hugh P. McAdams, Jr., Port Deposit, Md., and Albert C. Paulovitz, Kennett Square, Pa., assignors to Litton Systems, Inc., Drexel Hill, Pa.

Continuation of Ser. No. 53,397, Jun. 29, 1979, abandoned. This application Oct. 27, 1980, Ser. No. 200,950
Int. Cl.³ G01C 9/06, 9/12
U.S. Cl. 33—366 3 Claims



1. A cant angle sensor adapted to be attached to a supporting surface for developing a signal for representing a limited degree of tilt of the surface, the sensor comprising:

a resolver including a stator and a rotor having an axial shaft,

means for coupling a signal generated by said rotor to stationary resolver output terminals so that minimal drag is exerted on said rotor comprising resolver magnet wire directly connected from said rotor to said output terminals,

a conductive, nonmagnetic pendulum nonrotatably attached to said rotor shaft and effective to cause relative motion between said rotor and said stator,

magnet means for exerting a magnetic field across a flux path, a portion of said pendulum beng suspended for motion in the flux path, said magnet means exerting a viscous hysteresis damping force directly on said pendulum as said pendulum moves in the flux path thereby directly damping motion, and

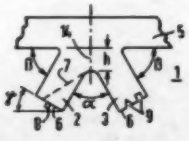
stop means arranged in the path of said pendulum for limiting the motion of said rotor to less than 90° thereby preventing damage to said coupling means, and for maintaining a portion of said pendulum always within the flux path.

4,375,728

SOLE MADE OF RUBBER OR OTHER ELASTIC MATERIAL FOR SHOES, ESPECIALLY SPORTS SHOES

Armin A. Dassler, Herzogenaurach, Fed. Rep. of Germany, assignor to Puma - Sportschuhfabriken Rudolf Dassler KG, Herzogenaurach, Fed. Rep. of Germany

Filed Jul. 9, 1980, Ser. No. 167,033
Claims priority, application Fed. Rep. of Germany, Jul. 9, 1979, 2927704
Int. Cl.³ A43B 13/04, 13/22; A43C 15/00
U.S. Cl. 36—32 R 30 Claims



1. A sole for running shoes made of rubber or other material having elastic properties, comprising a sole base having a plurality of resiliently flexible cleats projecting outwardly from an outer surface thereof, at least some of said cleats being formed of arms which are connected to each other and to said outer surface of the sole base by an intermediate portion of the cleat, said arms extending away from said sole base in directions diverging from said intermediate portion relative to each other and forming an acute angle with respect to said sole base.

4,375,729

FOOTWEAR HAVING RETRACTABLE SPIKES

Wiley T. Buchanan, III, 1514 Blake St., Denver, Colo. 80202

Filed Jul. 29, 1981, Ser. No. 288,053
Int. Cl.³ A43C 15/14, 15/02
U.S. Cl. 36—61 11 Claims

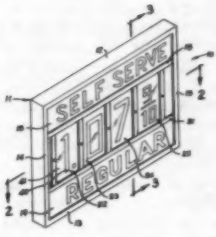
7. Retractable anti-skid spikes for footwear, comprising a sole including a flexible tread and spikes in said tread, said tread normally holding said spikes up in ineffective positions, said sole comprising a cavity containing a cam member shiftable from a first position to a second position for flexing said tread to extend said spikes in effective ground gripping positions.

4,375,730

REFLECTIVE INFORMATION DISPLAY DEVICE

Carlos L. Sanders, Atlanta; James L. Gebhardt, Roswell, and Ferris L. Hutchins, Doraville, all of Ga., assignors to The Mead Corporation, Dayton, Ohio

Filed Oct. 5, 1981, Ser. No. 308,012
Int. Cl.³ G09F 11/18
U.S. Cl. 40—518 14 Claims



1. A display device comprising a series of at least two support surfaces, each support surface defining at least in part, a display area, and including an adjustable information bearing self-coiling tape having coiled portions at its opposite ends mounted for movement relative to said support surface, said strip having thereon a series of areas defined by characters and a series of areas adjacent the characters, wherein one of said series of areas is translucent, said strip being mounted for slideable movement relative to the support surface so that said characters can be sequentially presented in the display area, and a light reflective surface disposed behind the strip in the display area whereby light impinging on said reflective surface is transmitted through the translucent area of the strip present in the display area and wherein said support surfaces together with their respective information strips are arranged in side by side relationship, adjacent support surfaces being interconnected by a spacer means including a strip retaining flange, said flange being disposed in overlapping relationship with respect to adjacent strips at edge portions of their respective support faces, said spacer means including adjusting means for moving

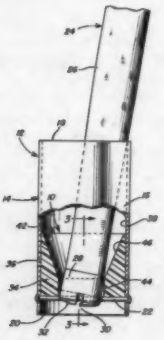
said retaining flange towards and away from the strip whereby the strip can be held locked against its associated reflective surface and released for sliding movement with respect to its associated reflective surface.

4,375,731

ADAPTER FOR FISHING ROD HOLDER

Robert A. Budd, 416 Pembroke Ave., Norfolk, Va. 23507

Filed Oct. 28, 1980, Ser. No. 202,187
Int. Cl.³ A01K 97/10
U.S. Cl. 43—21.2 3 Claims



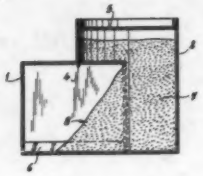
1. In combination with a fishing rod having a pair of perpendicular transverse grooves in the butt end of the handle and a fishing rod holder comprising an elongated tubular member having a cylindrical interior of constant diameter and provided with open upper and lower ends, a diametric pin adjacent the lower end of said tubular member, said pin being received in one of said grooves when the handle is inserted into the tubular member to prevent rotation about its longitudinal axis, the diameter of the tubular member being substantially greater than the handle to enable the fishing rod to pivot in relation to the tubular member and in some instances enabling the pin to engage surfaces of the butt end of the handle laterally of the grooves when not centered in relation to the tubular member thereby allowing the rod to rotate about its longitudinal due to tension exerted on the fishing line by a fish taking the hook so that the fishing reel, line and guide eyes swing toward the pull on the fishing line, that improvement comprising a cylindrical adapter inserted into the tubular member and oriented adjacent said pin for guiding and piloting the butt end of the fishing rod into engagement with the transverse pin in the tubular member, said adapter including a central bore extending therethrough with the upper end of the bore being outwardly tapered to form a funnel-shaped surface, said adapter including a thin upper edge merging with the interior surface of the tubular member to eliminate shoulder surfaces on which the butt end of the handle could rest, said adapter being of constant diameter for insertion into the upper end of the tubular member and downward movement into engagement with the pin, said adapter having a length substantially less than the tubular member to avoid interference with pivoting movement of the handle about a transverse axis and enabling unhindered removal of the fishing rod and easy insertion thereof with the rod being easily rotated a partial turn to register an appropriate groove with said pin.

4,375,732

DEVICE FOR COMBATTING RODENTS

Emile Waast, 47, bis rue de Moulin, F-59246 Mons en Pevele, France

Filed Jul. 16, 1981, Ser. No. 283,937
Claims priority, application France, May 21, 1980, 80 11301
Int. Cl.³ A01M 1/20
U.S. Cl. 43—131 7 Claims



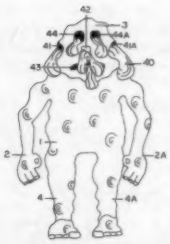
1. A device for combatting rodents, the combination comprising an elongated tunnel whose axis is generally horizontal in use of the device, said tunnel being of such size and shape that it permits the passage of a rodent to be poisoned therethrough, a poisoned bait container whose axis is generally vertical in use of the device, said bait container being joined to said tunnel and positioned approximately centrally with respect to the axis of said tunnel, the axis of said container being offset from the axis of said tunnel such that the area of juncture between said tunnel and said container involves a substantial portion but less than all of the cross-sectional areas of said tunnel and of said container, said container and said tunnel being in open communication with each other at their region of juncture, said bait containing extending above said tunnel, and a supply of poisoned bait in said container located therein above said tunnel so that said bait spills out of the open end of said container into an unobstructed uncontained loose sloped pile that partially obstructs the cross-sectional area of said tunnel, whereby a rodent passing through said tunnel either eats some bait from said pile or else at least physically contacts the sloped pile of bait obstructing its passage through said tunnel so as to be later poisoned upon grooming itself by the poisoned bait adhering to its body.

4,375,733

BLEEDING MONSTER TOY

Ivan G. Callais, Jr., 3413 Bissonet Dr., Metairie, La. 70002

Filed Jun. 11, 1981, Ser. No. 272,725
Int. Cl.³ A63H 13/00
U.S. Cl. 46—116 8 Claims



1. A figure toy, comprising:

a humanoid, monster-type body of durable, flexible and resilient material, said body having an internal body cavity;

a humanoid head portion of a relatively rigid material, said head portion having an internal head cavity in fluid com-

munication with said body cavity and a series of head portion orifices communicating with said head cavity and located in analogous positions to at least two of the head orificies of the humanoid figure including the aural, nasal, oral, and optic areas;

a relatively rigid extension fitted to said body, said rigid extension having head securing means for receiving and holding said head portion;

a body securing means in the base of said head portion for mating and joining said head portion with said relatively rigid extension; and

a colored, non-toxic, gelatinous fluid contained within said body cavity; the compressing of said body causing said colored, non-toxic, gelatinous fluid to flow into said internal head cavity and out through said head portion orifices in an oozing fashion, said colored, gelatinous fluid being visible on the exterior of said head portion oozing from said head portion orifices enhancing the visual impact of the figure toy.

4,375,734
PROTECTION OF PLANTS AGAINST FROST INJURY USING ICE NUCLEATION-INHIBITING SPECIES-SPECIFIC BACTERIOPHAGES

Lloyd M. Kozloff, San Francisco, Calif., and Russell C. Schnell, Boulder, Colo., assignors to University Patents, Inc., Norwalk, Conn.

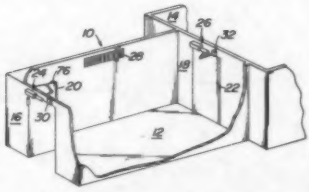
Filed Aug. 17, 1981, Ser. No. 293,643
Int. Cl.³ A01G *1/00*
U.S. Cl. 47—2 **14 Claims**

1. A method for protecting frost-sensitive plants against frost injury comprising applying to the plants non-phytotoxic virulent bacteriophages which are species-specific to the ice-nucleating bacteria normally present on the plant, said application being at a time sufficiently prior to the onset of freezing temperature and in a sufficient concentration so as to inhibit the ice-nucleating activity of said bacteria, thereby reducing the temperature at which frost injury occurs.

4,375,735
AIR LOCK DOOR CONTROL APPARATUS

James D. Rhoads, Reading, Pa., assignor to Dorma Door Controls Inc., Reamstown, Pa.

Filed Apr. 15, 1981, Ser. No. 254,425
Int. Cl.³ E06B *7/00*
U.S. Cl. 49—68 **13 Claims**

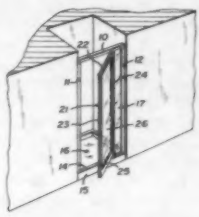


1. Air lock apparatus comprising an enclosed chamber, a pair of air lock doors closing respective ends of the chamber, door operator apparatus comprising a first fluid opener operatively associated with one of said doors, a second fluid opener operatively associated with the other of said doors, and control means for selectively actuating one or the other of said openers at a given time, said openers comprising closer means normally biasing said doors to their closed positions and fluid actuator means connected to said closer means for selectively overcoming said biasing means and causing the door to open, said control means comprising respective switch means coupled to said first and second fluid openers for actuating said openers, and respective latch means coupled to said doors and responsive to said switch means to latch the other of said doors closed when one of said doors is opened.

4,375,736
SHOWER DOOR HAVING ADJUSTABLE PIVOT MEMBERS

Lall D. Teckchandani, Lisle, Ill., assignor to United States Gypsum Company, Chicago, Ill.

Filed Sep. 19, 1980, Ser. No. 188,643
Int. Cl.³ E05D *7/08*
U.S. Cl. 49—388 **6 Claims**



1. In combination a pivotal door for an entrance or passage way, and an enclosure frame, said pivotal door comprising:

(a) upper and lower door edges and a pair of side door edges,

(b) said upper and lower door edges each having a channel track comprising a base and a pair of spaced-apart parallel flanges, said flanges terminating in a pair of lips directed towards each other, each of said lips having flat sides substantially parallel to each other and perpendicular to the sides of said flanges and cooperating to define with said base and flanges a channel chamber having an open slot,

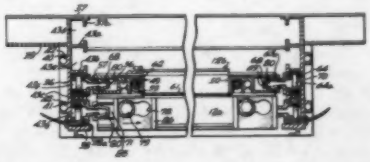
(c) a pair of pivot assemblies mounted one on each of the tracks of said upper and lower edges, each pivot assembly comprising a threaded bolt having an enlarged head engaged and slidably positioned in said channel chamber, said bolt extending through said open slot, nut means threadedly engaged with the threaded portion of said bolt and arranged to be tightened against the outer surfaces of the lips of said channel track for affixing said pivot assembly in any desired position on said channel track,

said enclosure frame comprising a header, a pair of jambs, and a threshold, said header and threshold being provided with pivot socket means receiving the shanks of said pivot assemblies.

4,375,737
SLIDING SASH WINDOW ASSEMBLY

Joseph R. Buzzella, 630 W. 84th St., Hialeah, Fla. 33014

Filed Apr. 4, 1980, Ser. No. 137,240
Int. Cl.³ E06B *3/26, 3/54*
U.S. Cl. 49—428 **7 Claims**



1. A sliding sash window assembly comprising, in combination, a rectangular window frame having respective upper and lower frame header and sill members interjoined at their ends with opposed, parallel side frame members, a plurality of rectangular window sashes, means slidingly interconnecting said

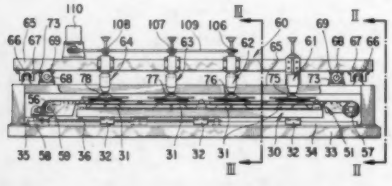
sashes in said window frame for relative sliding up and down movement therein, said interconnecting means comprising frictional contact means between said sashes and said frame for frictionally retaining said sashes in adjusted vertical positions in said frame, said frictional contact means comprising T-shaped grooves formed along the insides of said side frame members, a plurality of synthetic plastic slide members, said slide members being formed along their lengths with a substantially rectangular portion of uniform cross-sectional shape receivable within said T-shaped grooves for up and down sliding movement therealong, opposed outer side portions of said slide members being formed therealong with end-to-end recesses, said T-shaped grooves being defined by opposed inwardly-projecting portions receivable in said recesses, said slide members being hollow from end-to-end along their length, and compression spring means within said slide members for yieldingly constraining opposed outer surface portions of said substantially rectangular portion of said slide members against opposed inner wall portions of said frame members defining said T-shaped grooves, said substantially rectangular portions of said slide members being slotted along their outsides to open into the hollow interior thereof, said spring means comprising a U-shaped compression spring fitted within each end of said slide members so as to resiliently urge said opposed outer surface portions of said slide members in relatively outward directions.

4,375,738

METHOD FOR GRINDING GLASS PLATE AND THE LIKE BY NUMERICAL CONTROL AND GRINDING MACHINE THEREFOR

Shigeru Bando, Tokushima, Japan, assignor to Bando Kiko Co., Ltd., Tokushima, Japan

Continuation-in-part of Ser. No. 968,774, Dec. 12, 1978, Pat. No. 4,228,617. This application Jun. 30, 1980, Ser. No. 164,341
Claims priority, application Japan, Dec. 31, 1977, 52-158164
Int. Cl.³ B24B *9/10*
U.S. Cl. 51—3 **26 Claims**



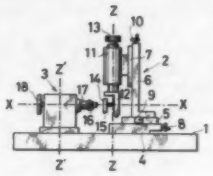
1. A method of grinding end portions of glass plates by numerical control comprising: fixing the glass plates on a plurality of fixing stands on a table, and relatively moving the glass plates and wheels for working the plates biaxially in a plane relative to the glass plate to be worked while rotating each working wheel, the working wheels being mounted on a plurality of working heads and each opposing a respective fixing stand, at least one of the working wheels being driven to orbit around an axis perpendicular to the plate, wherein the relative movement in the plane of the glass plates and the working wheels and the orbiting movement of the at least one working wheel are controlled by the numerical control device.

4,375,739

METHOD FOR MANUFACTURING HYPERBOLIC SURFACE

Haruhiko Machida, Tokyo, and Hiroshi Kobayashi, Kodaira, both of Japan, assignors to Machida Endoscope Company Limited, Tokyo, Japan

Filed Jan. 27, 1981, Ser. No. 228,859
Int. Cl.³ B24B *1/00, 13/00*
U.S. Cl. 51—58 **10 Claims**



1. A method for manufacturing a hyperbolic surface on a workpiece comprising:

securing a workpiece to be processed to a workpiece holding section;

securing a shaping tool having a straight working edge to a tool holding section in such a manner that the working edge is separated from a central axis by a given distance and is inclined with respect to the central axis by a given angle;

moving the tool about said central axis;

moving the tool holding section and the workpiece holding section relative to each other; and

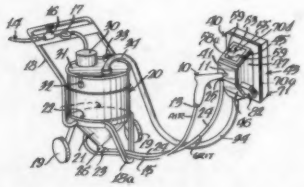
shaping the workpiece by the working edge of the tool into a hyperbolic surface along a hyperbolic locus formed by the working edge.

4,375,740

PORTABLE ABRADING CABINET DEVICE FOR RECYCLING ABRASIVE BLASTING SYSTEM

Donald J. Brown, Naperville, Ill., assignor to JPD Manufacturing Limited, Itasca, Ill.

Continuation-in-part of Ser. No. 909,537, May 25, 1978, Pat. No. 4,232,487. This application Nov. 3, 1980, Ser. No. 203,714
The portion of the term of this patent subsequent to Nov. 11, 1997, has been disclosed.
Int. Cl.³ B24C *3/06*
U.S. Cl. 51—425 **8 Claims**



1. In an abrasive blasting system including an abrading device having a canister containing a supply of abrasive material and having an outlet at the bottom thereof, a source of vacuum connected to the canister and applying a negative pressure to the upper surface layer of said abrasive material, a gun having a barrel for directing abrasive material in the direction of a surface area to be abraded and having a passageway therethrough, a source of positive pressure air connected to one end of said gun passageway, a first conduit connected to the canister above said abrasive material for returning abrasive material and abraded debris to the canister, a second conduit having a first end portion connected to the canister outlet and a second end portion connected to said gun passageway downstream of

the connection of said source of positive pressure to said gun, and means for causing abrasive material to flow toward the gun in said second conduit, a portable abrading cabinet device in which an abrasive blasting operation is performed on articles to be abraded, comprising:

a cabinet housing of cup-shaped configuration formed from a rear end wall and a skirt-like peripheral sidewall secured together to provide a forward open end portion and to afford an inner blasting chamber within the housing;

aperture means in the cabinet housing of a size to accommodate the gun barrel for pivoting movement to direct abrasive toward the work surface;

a transparent window member mounted in the cabinet housing for viewing the inner blasting chamber and the work surface during the blasting operation, the window member being spaced upwardly from the aperture means;

exhaust outlet means in the cabinet housing adapted to be connected to the first conduit for removing abrasive material and abraded debris from the blasting chamber, said exhaust outlet means being positioned below said aperture means;

a seat member extending peripherally of the forward open end portion of the housing;

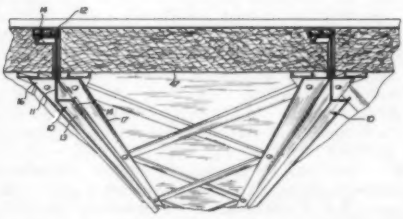
and a resilient peripheral sealing means secured to the seat member, the sealing means projecting forwardly of the seat member to provide sealing engagement with a work surface to be abraded when the first conduit is exhausting air from the inner blasting chamber.

4,375,741

INSULATION SYSTEM FOR METAL BUILDINGS AND THE LIKE

Kenneth J. Paliwoda, Parma, Ohio, assignor to Metal Building Insulation-Southwest, Inc., Houston, Tex.

Filed Sep. 29, 1980, Ser. No. 192,178
Int. Cl.³ E04B *1/80, 7/02*
U.S. Cl. 52—127.1 **23 Claims**



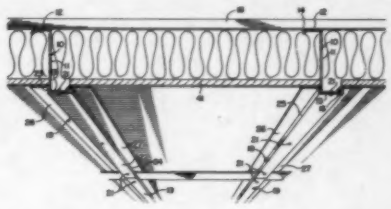
1. An insulated roof comprising spaced and substantially parallel purlins each having an upper flange and a web extending substantially perpendicular thereto, roof panels supported by and secured to said flanges, and support means supported by said flanges and providing a shelf along each side of said web at a location spaced from said flanges, a plurality of struts at intervals along said shelves supported at their ends on opposed shelves, and elongated insulation blankets positioned between said purlins supported along their edges by said shelves and at intervals along their length by said struts, said support means including hangers at spaced locations along the length of said shelves, said hangers providing support portions positioned over said flanges.

4,375,742

ROOF INSULATION SUPPORT SYSTEM

Kenneth J. Paliwoda, Parma, Ohio, assignor to Metal Building Insulation-Southwest, Inc., Houston, Tex.

Filed Jun. 16, 1980, Ser. No. 159,777
Int. Cl.³ E04B *1/74*
U.S. Cl. 52—404 **10 Claims**



1. A building structure comprising a plurality of parallel purlins providing a generally vertical web and upper and lower flanges extending from opposite edges of said web, roof panels supported above said purlins, an elongated support member fastened to said lower flange and extending below the lower surface thereof, said support member providing oppositely extending shelf portions on opposite sides of said lower web, a plurality of spaced and parallel bridging members extending substantially perpendicular to said support members and mounted at their ends on adjacent shelf portions, and elongated insulation means extending between adjacent purlins, said insulation means being supported along its edges by said shelf portions and at intervals along its length by said bridging members, said support members including a lip portion operable to overlie an edge of said lower flange to suspend said support member along its length in a hanging position during installation thereof and while it is rolled up into its installed position for fastening to said lower flange, said shelf portions being substantially coplanar, said support members providing a central wall extending below said lower flange and below the plane of said shelf portions, and a pair of spaced substantially perpendicular side walls joining the outer ends of said central wall and the inner sides of the associated shelf portion, the spacing between said side walls being greater than the width of said lower flange to accommodate variations in the spacing between said purlins.

4,375,743

APPARATUS FOR AND METHOD OF ASSURING THE QUALITY OF THE RESULTS OBTAINED FROM A BLOOD GAS ANALYZER

Kevin J. Sullivan, Painted Post, N.Y., assignor to Corning Glass Works, Corning, N.Y.

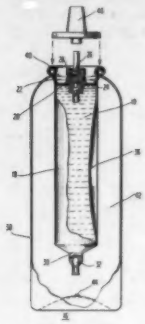
Division of Ser. No. 3,072, Jan. 12, 1979, Pat. No. 4,226,941.
This application Sep. 8, 1980, Ser. No. 184,760
Int. Cl.³ B65B *3/16, 7/14, 31/02*
U.S. Cl. 53—434 **3 Claims**

1. A method of storing a liquid quality control reagent solely in the liquid phase for use in a blood gas analyzer, said method comprising:

providing a first container for receiving said liquid, said container having a variable volume and being gas impermeable, and having a valved exit passageway and an input port projecting therefrom;

overfilling said container with said reagent such that the liquid level in said container extends into said input port;

sealing said container at said input port below said liquid level;



inserting said first container into a second container leaving a space therebetween; and

introducing a compressed gas into said space.

4,375,744

APPARATUS FOR CONTROLLING THE ROTATIONAL SPEED OF THE SPINDLES OF A SPINNING PREPARATORY MACHINE

Emil Briner; Peter Novak, both of Winterthur, and Hermann Gasser, Frauenfeld, all of Switzerland, assignors to Rieter Machine Works Ltd., Winterthur, Switzerland

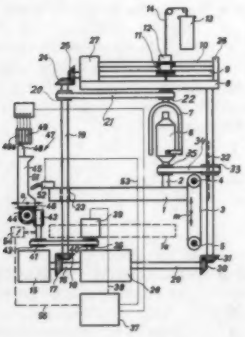
PCT No. PCT/EP80/00091, § 371 Date May 28, 1981, § 102(e) Date Apr. 20, 1981, PCT Pub. No. WO81/00866, PCT Pub. Date Apr. 2, 1981

PCT Filed Sep. 3, 1980, Ser. No. 261,153

Claims priority, application Switzerland, Sep. 28, 1979, 8768/79

Int. Cl.³ D01H *1/26, 1/04*

U.S. Cl. 57—96 **6 Claims**



1. An apparatus for controlling the rotational speed of spindles of a spinning preparatory machine as a function of the increasing bobbin diameter of bobbins carried by the spindles and upon each of which bobbins there is formed a bobbin package, wherein flyers are operatively associated with the spindles carried by a spindle rail performing traversing movements, comprising:

an infinitely adjustable variator for the drive of the spindles;

a stepwise indexible control shaft for infinitely adjusting said variator;

an electric adjustment motor for driving said control shaft;

motor control means for inputting control pulses to said electric adjustment motor;

said motor control means comprising a programmable set value transmitter which can be externally set to a predetermined number of control switching pulses for each indexing step of said control shaft;

said motor control means further comprising an externally settable correction element for correcting the number of pulses determined by the set value transmitter by the addition or subtraction of correction pulses during each indexing step;

scanning means for scanning reversal points of a traversing stroke of the spindle rail carrying the spindles;

said scanning means delivering a command for outputting the control switching pulses of the motor control means;

means for determining the increasing bobbin diameter; and

at least any one of said set value transmitter and said correction element being operatively connected with said means for determining the increasing bobbin diameter.

4,375,745

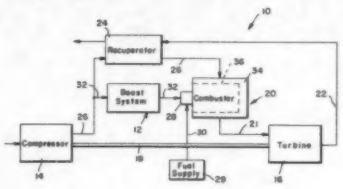
AIR BLAST FUEL NOZZLE SYSTEM

Rainer H. Schelp, Chandler, Ariz., assignor to The Garrett Corporation, Los Angeles, Calif.

Continuation of Ser. No. 5,629, Jan. 22, 1979. This application May 1, 1981, Ser. No. 259,646

Int. Cl.³ F02C *7/057*

U.S. Cl. 60—39.29 **6 Claims**



1. A recuperated gas turbine engine comprising:

(a) a gas operable turbine;

(b) a combustor;

(c) a compressor drivably connected to said turbine;

(d) a recuperative heat exchanger having first and second thermally communicating flow paths extending therethrough;

(e) first conduit means for flowing exhaust gas discharged from said combustor through said turbine to operate the same, and then through said first heat exchanger flow path;

(f) second conduit means for flowing air discharged from said compressor through said second heat exchanger flow path for recuperation of heat from turbine discharge gas flowing through said first heat exchanger flow path, and for flowing the recuperated compressor discharge air into said combustor;

(g) air blast nozzle means mounted on said combustor for receiving and mixing fuel and pressurized air and injecting the fuel-air mixture into said combustor for mixture and combustion with said recuperated air entering said combustor;

(h) third conduit means for flowing nonrecuperated compressor discharge air into and through said nozzle means to form and inject said fuel-air mixture, substantially all nonrecuperated compressor discharge air entering said combustor passing through said nozzle means;

(i) boost pump means disposed in said third conduit means for selectively and controllably boosting the pressure of said nonrecuperated compressor discharge air entering said nozzle means; and

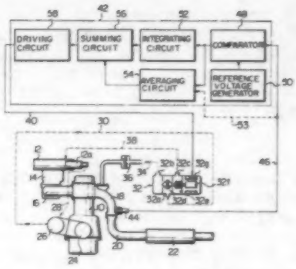
(j) control means for energizing said boost pump means when the pressure level of said nonrecuperated compressor discharge air received by said nozzle means is less than a predetermined magnitude, and for de-energizing said

boost pump means when said pressure level exceeds said predetermined magnitude.

4,375,746
EXHAUST GAS PURIFYING METHOD OF AN INTERNAL COMBUSTION ENGINE

Kyo Hattori, Susono, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Aichi, Japan

Filed Jul. 28, 1980, Ser. No. 173,017
Claims priority, application Japan, Aug. 6, 1979, 54-99407
Int. Cl.³ F01N *3/22*
U.S. Cl. 60—274 **7 Claims**



1. Method of purifying exhaust gas of an internal combustion engine having an air adjusting means for controlling the amount of secondary air supplied into an exhaust system of the engine, a sensor for detecting concentration of a particular component contained in the exhaust gas after having been mixed with said supplied secondary air, and a catalytic converter for reducing noxious components contained in the exhaust gas after having been mixed with said supplied secondary air, said method comprising the steps of:

generating, in response to a sensed signal from said sensor, an air-fuel ratio discrimination signal having two voltage levels depending upon whether the air-fuel ratio of said engine is rich or lean in comparison with a predetermined air-fuel ratio;

gradually increasing or decreasing, in response to the level of said air-fuel ratio discrimination signal, the amount of secondary air supplied into the exhaust system from said air adjusting means; and,

additionally supplying the secondary air to the exhaust system from said air adjusting means, in an amount which changes depending upon the change of the average value of said air-fuel ratio discrimination signal, so as to bias the supplied secondary air amount.

4,375,747
CONTROL SYSTEM FOR PRESSURE-DRIVEN LOADS

Richard Friedrich, Gauting, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Dec. 12, 1979, Ser. No. 102,942
Claims priority, application Fed. Rep. of Germany, Jan. 22, 1979, 2902264
Int. Cl.³ F15B *11/04*
U.S. Cl. 60—433 **6 Claims**

1. A manually operable control system for use with at least one reversible pressure-driven load which can be operated at variable pressures, the system allowing the pressure to be continuously varied and further allowing the load to be reversed while protecting the load from pressure shock resulting from reversal and from abrupt variation in pressure, comprising:

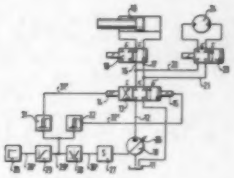
a reversible pressure-driven load;

a directional servo responsive to a directional signal and connected in series with the load, the directional servo having a forward state and a reverse state, the directional servo applying pressure to the load in such a manner that the load operates in a forward direction when the directional servo is the forward state and the load operates in a reverse direction when the directional servo is in a reverse state;

an adjustable pressure servo responsive to an electrical pressure signal, the pressure servo including a pump of a variable-pressure and non-reversible type having its output connected in series with the directional servo and continuously varying the pressure applied thereto as a function of the electrical pressure signal;

a manually adjustable control producing a continuous electrical control signal with a voltage which varies with time between a maximum value and a minimum value which have equal magnitudes and opposite senses as a function of the adjustment of the control;

a signal shaper connected to the control and responsive to the control signal, the shaper producing an electrical shaped signal which varies between said values as the output signal when the variation of the output signal with time at most equals a predetermined rate, and which further varies at said predetermined rate when the variation of the output signal with time is greater than said predetermined rate;



a directional discriminator responsive only to the sense of the shaped signal and producing an electrical directional signal, the directional discriminator being connected to and cooperating with the directional servo to place the directional servo in its forward state when the shaped signal is in one sense and to place the directional servo in its reverse state when the shaped signal is in an opposite sense; and

a pressure monitor responsive only to the magnitude of the shaped signal and producing the continuous electrical pressure signal in response thereto which varies with time directly as said magnitude varies with time, the pressure monitor being connected to and cooperating with the pressure servo, whereby the pressure is varied as a function of the magnitude of the shaped signal.

4,375,748
ENGINE SYSTEM WITH EXHAUST TURBINE SUPERCHARGER

Ken Yamane, Yokohama, Japan, assignor to Nissan Motor Co., Limited, Yokohama, Japan

Filed May 18, 1981, Ser. No. 264,608
Claims priority, application Japan, May 26, 1980, 55-69784
Int. Cl.³ F02B *37/00*
U.S. Cl. 60—611 **4 Claims**

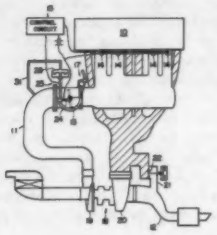
1. An engine system comprising, in combination,

an internal combustion engine including power cylinders, an air induction passageway leading to said power cylinders, a throttle valve positioned in said air induction passageway and rotatable about an axis fixed in said air induction passageway to and from an idle position providing a minimum degree of opening in said air induction passageway through said throttle valve and an exhaust discharge passageway leading from said power cylinders;

an exhaust turbine supercharger including a compressor unit positioned in said air induction passageway and a turbine

unit which is positioned in said exhaust discharge passageway for being driven by the exhaust gases discharged from said power cylinders into the exhaust discharge passageway and which is drivingly connected to said compressor unit; and

a valve stop mechanism arranged in conjunction with said



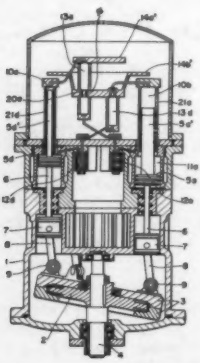
throttle valve and operative to stop said throttle valve in an angular position anterior to said idle position thereof when said throttle valve is turned about said axis toward said idle position thereof in the presence of an air pressure higher than a predetermined value in said air induction passageway downstream of said compressor unit and upstream of said throttle valve.

4,375,749

MULTIPLE CYLINDER REFRIGERATION APPARATUS

Yoshihiro Ishizaki, Kamakura, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Japan

Filed Oct. 22, 1981, Ser. No. 313,793
Claims priority, application Japan, Oct. 29, 1980, 55-151632
Int. Cl.³ F25B 9/00
U.S. Cl. 62—6 6 Claims



1. A multiple-phase Stirling cycle refrigeration apparatus housed in an approximately cylindrical crankcase, which comprises:

first, second, third and fourth piston cylinders arranged within the crankcase on a circle concentric therewith, said first and third piston cylinders, and said second and fourth piston cylinders, opposing each other across the center of the crankcase, said first and third piston cylinders being adapted to produce very low temperatures, said second and fourth piston cylinders being adapted to produce moderately low temperatures, each piston cylinder having a large diameter portion and an elongated small diameter portion;

first, second, third and fourth pistons adapted for reciprocation within respective ones of said first through fourth piston cylinders, each piston having a large diameter portion and an elongated small diameter portion corresponding to the large and small diameter portions of the respective piston cylinder;

the small diameter portion of each piston cylinder and of the respective piston within said piston cylinder delimiting an expansion space, the large diameter portion of each piston cylinder and of the respective piston within said piston cylinder delimiting a compression space on the expansion side of the large diameter portion of said piston;

means interconnecting the expansion space of one piston cylinder with the compression space of the next adjacent piston cylinder for extracting refrigerating temperatures; and

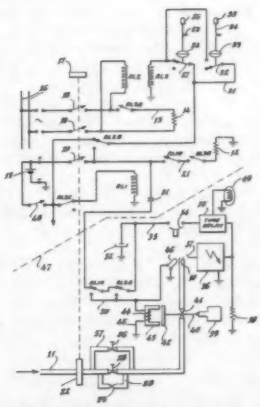
means for reciprocating said first through fourth pistons within said first through fourth piston cylinders in such a manner that said first and third pistons in said first and third piston cylinders, and said second and fourth pistons in said second and fourth piston cylinders, are displaced in phase by 180°.

4,375,750

METHOD AND APPARATUS FOR CONTROLLING THE TEMPERATURE IN THE REFRIGERATOR CHAMBER AND FREEZER COMPARTMENT OF AN ABSORPTION REFRIGERATOR

Peter E. Blomberg, Stockholm, Sweden, assignor to Aktiebolaget Electrolux, Stockholm, Sweden

Continuation-in-part of Ser. No. 140,210, Apr. 14, 1980, abandoned. This application Dec. 30, 1981, Ser. No. 335,825
Int. Cl.³ F25B 15/00
U.S. Cl. 62—101 14 Claims



1. In an absorption refrigerating apparatus containing a refrigerant in a body of absorption liquid and employing an inert pressure equalizing gas and provided with an energy supply and a refrigerant cabinet having a refrigerating chamber and a freezing chamber, the apparatus having a first thermostat that is influenced by the temperature of said refrigerating chamber to thereby connect and disconnect the energy supply to the refrigerating apparatus, the improvement comprising a second thermostat dependent upon the freezing chamber temperature for activating said energy supply to said refrigerating apparatus for short periods of time during the disconnect period of said first thermostat.

11. A method for use with a refrigerator operated by an absorption refrigerating apparatus, said refrigerator having a refrigerating chamber and a freezing chamber comprising: providing at least one thermostat which is influenced by the temperature in said refrigerating chamber controlling said refrigerating apparatus and said freezing chamber to automati-

cally defrost a cooling element in said refrigerating chamber and to avoid a too low temperature in said refrigerating chamber at low ambient temperature, maintaining an even and low temperature in said freezing chamber, and supplying an evaporator for the cooling of said freezing chamber with refrigerant condensate at short intervals during periods when said thermostat for the refrigerating chamber is in its disconnected condition.

4,375,751

SAFETY CONTROL DEVICE FOR VAPOR GENERATING AND RECOVERING APPARATUS

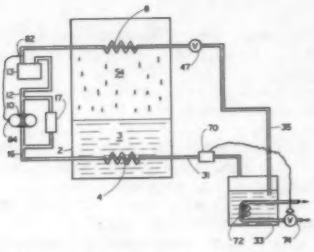
James W. McCord, 9101 Nottingham Pkwy., Louisville, Ky. 40222

Filed Aug. 20, 1981, Ser. No. 294,777

The portion of the term of this patent subsequent to Nov. 10, 1998, has been disclaimed.

Int. Cl.³ F25B *1/00*; B01D *3/42*

U.S. Cl. 62—126 **3 Claims**



1. In a vapor generating and recovering apparatus for vaporizing a liquid and condensing vapor, including a housing having at least one compartment therein, said compartment having a liquid and a vapor therein, and a heating and cooling system to vaporize the liquid and condense the vapor, said system including a refrigerant compressor, a refrigerant condenser, expansion means, a refrigerant evaporator in heat exchange relation with the vapor, and conduit means in flow communication with said condenser, said expansion means, and said evaporator, said system further including a heat transfer fluid therein, the improvement comprising:

a sensing means on the low pressure side of the heating and cooling system in de-activating communication with means that create an unsafe vapor level condition in the apparatus, said sensing means being responsive to de-activate said refrigerant compressor in response to preselected conditions of said cooling means which create said unsafe vapor level.

4,375,752

AIR CONDITIONING APPARATUS

George E. Stocking, Louisville; Joseph R. Noland, Crestwood, and Donald L. Sidebottom, Louisville, all of Ky., assignors to General Electric Company, Louisville, Ky.

Filed Sep. 8, 1981, Ser. No. 300,081

Int. Cl.³ F25D *21/00*

U.S. Cl. 62—150 **4 Claims**

1. A condensate disposal control means for a self-contained air conditioning unit for heating and cooling an enclosure comprising:

a chassis including a base member and a barrier dividing said chassis into an indoor and outdoor compartment;

a refrigerant circuit including an outdoor heat exchanger and indoor heat exchanger;

a compressor;

a reversing valve for selectively connecting said compressor to said heat exchangers whereby said outdoor heat exchanger functions as an evaporator during operation of said unit on the heating cycle and said indoor heat exchanger funtions as an evaporator during operation of said unit on the cooling cycle;

indoor fan means for moving enclosure air through said indoor heat exchanger;

outdoor fan means for moving outdoor ambient air through said outdoor heat exchanger;

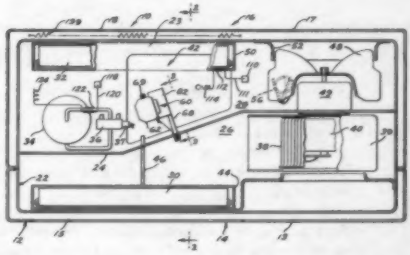
a condensate collecting sump in said base member arranged in said outdoor compartment;

condensate disposal means arranged in said outer compartment including a condensate slinger motor operable in the heating cycle for lifting water when present in said sump and directing said water into the path of air being circulated by said indoor fan means where it is directed through and vaporized in the relatively warm indoor heat exchanger;

a control system for operating said condensate disposal means including:

(a) a thermostat means having a first stage switching means operable for energizing said compressor in said heating cycle when the temperature of said enclosure is a predetermined comfort level, and a second stage switching means operable for deenergizing said compressor when the temperature of said enclosure drops to a second lower pre-determined level during the operation of said compressor in said heating cycle;

(b) a heating means arranged in the path of air through said



indoor heat exchanger being energized by said second stage switching means when the temperature of said enclosure drops to the second lower preselected temperature;

(c) a first control temperature sensing means for maintaining operation of said compressor in the heating cycle when said temperature sensed by said temperature sensing means is above a preselected frost accumulation level and for deenergizing said compressor when said temperature sensing means senses a preselected frost accumulation level to place said unit in a defrost mode;

(d) a second control temperature sensing means for maintaining operation of said outdoor fan independent of said first control when the ambient sensed by said temperature sensing means is above a frost accumulation temperature and to complete a circuit to said fan through said first control if said temperature sensing means of said second control senses a preselected frosting temperature to deenergize said outdoor fan when said compressor is deenergized;

(e) circuit means arranging said condensate slinger motor in series with said outdoor fan so that said slinger motor is operable only when said outdoor fan is energized; and

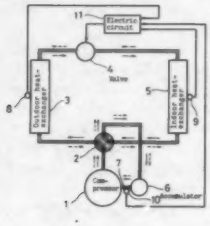
(f) a temperature responsive sensing means being arranged in contact with said refrigerant circuit at a location that will sense when said outdoor heat exchanger is functioning as the system condenser to prevent operation of said slinger motor when said unit is in the cooling cycle.

4,375,753

AIR CONDITIONER

Kenichiro Imasu, Yasu; Akira Nakazawa; Masataka Yamane, both of Kusatsu, and Kengo Takahashi, Katano, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Mar. 31, 1980, Ser. No. 135,930
Claims priority, application Japan, Apr. 2, 1979, 54-039998; Apr. 26, 1979, 54-052098; Sep. 29, 1979, 54-125572; Oct. 1, 1979, 54-127134; Oct. 1, 1979, 54-127136
Int. Cl.³ F25B 13/00; G05D 15/00
U.S. Cl. 62—160 38 Claims



1. An air conditioner comprising:

a compressor for compressing a refrigerant,

an outdoor heat-exchanger,

a thermal electric type expansion valve serving as a pressure reducing device for controlling flow rate of said refrigerant,

an indoor heat-exchanger,

refrigerant pipes connecting said compressor, said outdoor heat-exchanger, said device and said indoor heat-exchanger in series,

characterized in that

said valve comprises a valve part and a driving part,

said valve part comprises a valve seat disposed in a fluid path between a pair of ports, a valve rod which is movable in relation to said valve seat thereby to change flow rate of the valve,

said driving part comprises, in a casing, a pair of bimetal pieces which are linked each other by a heat insulating spacer to said casing, one of said bimetal pieces supporting said valve rod and the other of said bimetal pieces being held by said casing in a heat insulated manner, said first bimetal piece having a heater wire disposed in heat conductive relation thereto to move said rod responding to an input of electric power to said wire, and

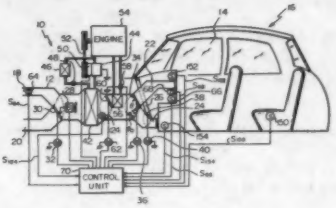
said air conditioner further comprises an electric power output means which issues said input electric power, value of which changes responding to a refrigerant state difference between a first refrigerant state measured by a first measurement element disposed on either one of said indoor heat-exchanger or said outdoor heat-exchanger that is functioning as an evaporator at a position of extended length thereof where the refrigerant always is in a mixed phase of gas and liquid and a second refrigerant state measured by a second measurement element disposed at a part between said either one of said indoor heat-exchanger or said outdoor heat-exchanger functioning as an evaporator and said compressor.

4,375,754

VEHICLE TEMPERATURE CONTROL APPARATUS

Eiji Okura, Konan, Japan, assignor to Diesel Kiki Company, Ltd., Tokyo, Japan

Filed Jul. 6, 1981, Ser. No. 280,733
Claims priority, application Japan, Jul. 8, 1980, 55-92306
Int. Cl.³ F25D 17/00; F24F 7/00
U.S. Cl. 62—180 8 Claims



1. A temperature control apparatus for controlling a temperature in a passenger compartment of an automotive vehicle comprising:

set means for setting a command compartment temperature for the compartment;

compartment temperature sensor means for sensing an actual compartment temperature in the compartment;

temperature control means for discharging temperature controlled air into the compartment;

outlet temperature sensor means for sensing an outlet temperature of the temperature control means;

rear seat passenger sensor means for detecting presence and absence of at least one vehicle passenger on a rear seat in the compartment;

air flow control means for controlling flows of the temperature controlled air into an upper portion and a lower portion of the compartment; and

operation control means for turning the temperature control means on and off;

said operation control means being constructed to compute a control on temperature and a control off temperature as predetermined functions of the command compartment temperature and the actual compartment temperature, turn the temperature control means on when the outlet temperature is higher than the control on temperature and turn the temperature control means off when the outlet temperature is lower than the control off temperature;

said operation control means being further constructed to determine a proportion of the temperature controlled air into the compartment lower portion to the temperature controlled air into the compartment upper portion depending on whether the rear seat is occupied by a passenger.

4,375,755

SNOW HORNS

Richard J. Barbini, 55 Hudson St., Dover, N.J. 07801, and Matthew C. DeCicco, 425 Park Ave., Berkeley Heights, N.J. 07922

Filed Aug. 24, 1981, Ser. No. 295,282
Int. Cl.³ F25D 13/00
U.S. Cl. 62—330 7 Claims

1. A snow horn device for depositing a ribbon of solid CO_2 of substantially uniform depth comprising

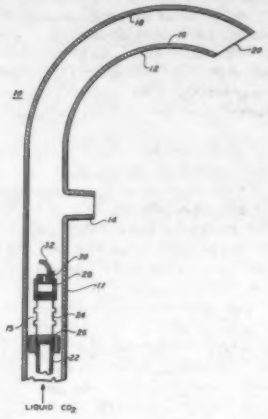
means for discharging liquid CO_2 to form a stream of solid and gaseous CO_2;

a horn section having an inlet and outlet and a rectangular cross section of increasing area in a direction from said inlet to said outlet and having curved inner and outer wall sections;

means disposed in the vicinity of said discharge means for

deflecting said stream toward the interior surface of said outer wall section; and

means for placing the interior of said horn section in communication with ambient atmosphere to induce said atmosphere into said horn interior whereby said solid CO_2 is spread substantially uniformly over said interior surface and said ribbon of solid CO_2 is formed upon discharge of solid CO_2 from said horn outlet.



4,375,756

ICE CUBE MACHINE

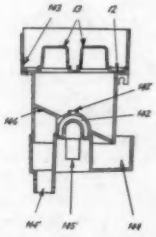
Emanuele Lanzani, Milan, Italy, assignor to King-Seeley Thermos Co., Prospect Heights, Ill.

Continuation of Ser. No. 105,382, Dec. 17, 1979, abandoned, which is a continuation-in-part of Ser. No. 2,718, Jan. 11, 1979. This application Oct. 15, 1981, Ser. No. 311,624

Claims priority, application Italy, Feb. 2, 1978, 19904 A/78; Jan. 30, 1979, 19702 A/79

Int. Cl.³ F25C *1/04*

U.S. Cl. 62—347 2 Claims



1. A machine for forming ice cubes comprising,

a plurality of liquid receiving cups, means for refrigerating the same to freeze a portion of water received therein,

a first member having a surface for receiving cubes upon release from said cups,

a second member defining a sump for excess water drained from said cups,

spray mechanism comprising, an outer chamber member having a dome-like inner surface and an exit passage leading therefrom toward said cups formed on and integral with said first member, said spray mechanism further comprising an inner chamber member having a dome-like outer surface projecting into said outer chamber member and formed on and integral with said second member,

and means for delivering water to said chamber and causing the same to exit from said passage toward said cups.

4,375,757

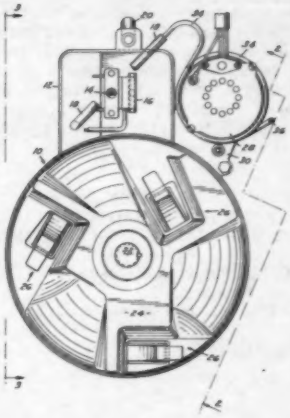
INLET WATER TEMPERATURE CONTROL FOR ICE MAKING MACHINE

Mark F. Amsdill, Dexter; James M. Allmendinger, Ypsilanti, and Harry Lender, Lakeland, all of Mich., assignors to William A. Stoll and William J. Moosbrugger, both of Ann Arbor, Mich., part interest to each

Filed Jul. 17, 1981, Ser. No. 284,459

Int. Cl.³ F25C *1/14*

U.S. Cl. 62—354 6 Claims



3. An inlet supply water temperature electro-mechanical feedback control for an ice making machine, the feedback control comprising in combination a mechanical ice crystal scraper in the machine, a mechanical drive means to actuate the ice crystal scraper, an electric drive motor energizing the mechanical drive means and ice crystal scraper, and, a heat exchanger in thermal communication with the electric drive motor and in fluid communication with the inlet supply water to the ice making machine, the heat exchanger comprising a tubular coil wrapped about the electric drive motor and the inlet water supply passing through the tubular coil,

such that increasing ice crystal buildup causes increased mechanical loading of the ice crystal scraper, mechanical drive means and electric drive motor, the increased mechanical loading of the electric drive motor causing an increase in motor temperature thereby heating the supply water to the ice making machine and reducing the ice buildup that resists the ice crystal scraper.

4,375,758

PORTABLE ICE TABLE

Jesse K. Simmons, 4030 Sleeth Rd., Milford, Mich. 48042

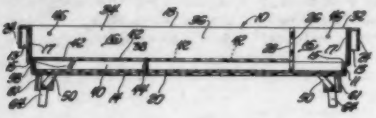
Filed Sep. 14, 1981, Ser. No. 301,500

Int. Cl.³ F25D *3/08*

U.S. Cl. 62—457 23 Claims

1. A portable ice table comprising: a platform having an outer insulating surface, a bottom, an upstanding vertical wall extending upward from the bottom and having an inner surface with an upper edge, and a separating member with opposite ends secured to the inner surface and extending vertically from the bottom of the platform to the upper edge of the inner surface; said platform further including a handle, a recessed dry storage compartment and a recessed ice storage compart-

ment separated from the dry storage compartment by the separating member and having a first section for storing ice, a manually removable perforated ice supporting member and a second section; said first section being disposed above the second section with the perforated ice supporting member being disposed between the first and second sections; said perforated ice supporting member including a plurality of openings between the first and second sections; said second



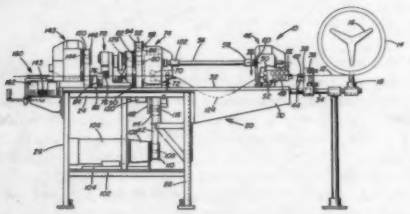
section including at least one positioning member to position the ice supporting member between the first and second sections; said second section including means to store and drain water from the ice storage compartment; a plurality of supporting members adjustably secured to the platform to support the platform above a generally horizontal surface; a plurality of supporting members fixedly secured to the platform; and a removable insulating cover.

4,375,759

VARIABLE SPEED, SYNCHRONOUSLY OPERABLE, STOCK MATERIAL FEEDING AND FORMING APPARATUS

Patrick J. Gentile, Pittsburgh, Pa., assignor to Vamco Machine & Tool, Inc., Pittsburgh, Pa.

Filed Dec. 15, 1980, Ser. No. 216,570
Int. Cl.³ B21F *11/00*
U.S. Cl. 72—131 **12 Claims**



1. Apparatus for synchronously performing a plurality of operations on a web of stock material comprising,

a frame having a bed,

pull means positioned on said bed for continuously pulling the stock material from a source,

a stock material forming device positioned downstream of said pull means on said bed,

intermittent feed means for intermittently feeding a preselected length of the stock material to said stock material forming device,

said intermittent feed means being positioned on said bed between and spaced from said pull means and said stock material forming device,

said pull means, said stock material forming device, and said intermittent feed means being positioned in spaced longitudinal relation on said bed in alignment with the direction of feed of the stock material on said bed,

an output shaft positioned opposite said bed,

power means drivingly connected to said output shaft for continuously rotating said output shaft at a preselected speed,

a common power shaft positioned on said bed in spaced parallel relation with the direction of feed of the stock material on said bed and closely adjacent to said intermittent feed means and said stock material forming device,

drive connecting means for drivingly connecting said output shaft to said common power shaft to continuously rotate said common power shaft,

first drive means for directly drivingly connecting said common power shaft to said intermittent feed means to convert continuous rotation of said common power shaft to intermittent rotation of said intermittent feed means for intermittently feeding at a preselected feed rate, a preselected length of the stock material to said material forming device,

second drive means spaced longitudinally from said first drive means on said common power shaft for directly drivingly connecting said common power shaft to said stock material forming device,

said first and second drive means extending in spaced parallel relation to one another between said common power shaft and said intermittent feed means and said stock material forming device respectively,

said stock material forming device and said intermittent feed means being connected to each other by the common drive connection to said common power shaft so that said stock material forming device operates synchronously in timed relation with said intermittent feed means, and

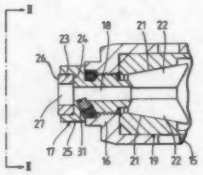
a drive shaft positioned in spaced parallel relation to said common power shaft and extending between and drivingly connecting said intermittent feed means and said pull means for actuating said pull means to continuously advance the stock material from the source to said intermittent feed means for feeding to said stock material forming device in timed relation to the operation of said stock material forming device on the stock material.

4,375,760

ANVIL FOR RIVETING TOOL

Donald S. Savage, St. Albans, and Raymond D. Lacey, Essendon, both of England, assignors to Aerpat A.G., Zug, Switzerland

Filed Sep. 2, 1980, Ser. No. 183,453
Claims priority, application United Kingdom, Sep. 7, 1979, 7931178
Int. Cl.³ B21J *15/34*
U.S. Cl. 72—391 **6 Claims**



1. An anvil secured to one end of a riveting tool of the type for use with a rivet having a shell with a head at one end which, in use, is supported against the anvil whilst the tool pulls a mandrel or stem into and through the shell, said anvil having at least a first part thereof which in use contacts the fastener shell head, said first part being formed of a resilient material which is strong enough to support the shell against the pull of the mandrel and is soft enough not to damage the surface of the shell head, including a rigid part providing a backing or mount for the said resilient part, and a bore extending through both parts for reception of the mandrel or stem during a riveting operation, the cross-sectional dimension of the bore being greater in the resilient part than in the rigid part.

4,375,761

MONITORING INTERNAL COMBUSTION ENGINES

Richard F. Pywell, Ottershaw, England, assignor to The British Petroleum Company Limited, London, England

Filed Sep. 30, 1980, Ser. No. 192,208
Claims priority, application United Kingdom, Oct. 4, 1979, 7934567
Int. Cl.³ G01N 3/56, 23/00
U.S. Cl. 73—7 7 Claims

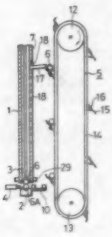
1. A method of monitoring the wear of a contact surface between relatively moving parts comprising fixing a length of radioactive material into the part to be monitored so that one end of the material is flush with the wearing surface, the radioactive material having a hardness which is not greater than that of the material of the wearing surface into which it is fixed and measuring the loss of radioactivity as the surface of the part and radioactive material are worn away.

4,375,762

IMPACT-FATIGUE TEST MACHINE FOR GRINDING BALLS

Osamu Yanagisawa; Tsuneo Ishigai, both of Hiroshima, and Masayoshi Kiyama, Tokyo, all of Japan, assignors to Nippon Nenryo Company Ltd., Tokyo, Japan

Filed Apr. 24, 1981, Ser. No. 257,057
Claims priority, application Japan, Oct. 15, 1980, 55-143018
Int. Cl.³ G01N 3/30
U.S. Cl. 73—12 15 Claims



1. An impact-fatigue test machine for grinding balls comprising:

a vertically extending guide means which guides dropping balls and has an upper portion and a lower end;

an anvil means below the lower end of said guide means, said anvil means having a recess which opens upwardly toward said lower end to receive the ball successively;

a counter means to count the number of the balls received by the recess of said anvil means;

a supporting means which supports the periphery of a ball on a preceding ball that rests on the recess of said anvil means;

pushing means which pushes said preceding ball out of said recess;

a lifting means which lifts the ball pushed out of said recess up to the upper portion of said guide means; and

a detecting means to detect fracture of said balls.

4,375,763

DEVICE FOR DETECTING AND LOCATING LEAKS IN PIPELINES

William M. Hogan, Jacksonville, Ark., assignor to AGL Corporation, Jacksonville, Ark.

Filed Oct. 14, 1980, Ser. No. 196,269
Int. Cl.³ G01M 3/28
U.S. Cl. 73—40.5 R 10 Claims

1. A leak locator probe for use in detecting leaks in a pipe comprising:

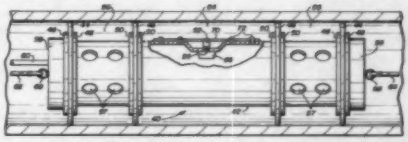
a housing having a first closed end and a second closed end with an aperture located in the wall of said housing;

airflow measuring means disposed adjacent said aperture for measuring airflow through said aperture;

means disposed on the exterior of said housing for providing a boundary that defines a first sealed volume defined by the exterior of said housing, the interior wall of said pipe and said boundary, said volume located such that said aperture provides a fluid passageway between said sealed volume and the interior of said housing;

said means for providing a boundary including a first pair of annular sealing rings;

a pair of annular stiffening rings for said first sealing rings, said stiffening rings disposed on either side of and adjacent each of said first annular sealing rings for reducing the flexing of said sealing rings, said stiffening rings having an outer diameter less than the outer diameter of said first sealing rings;



a second pair of annular sealing rings disposed on the exterior of said housing for defining a second and third sealed volume, said second volume being defined by one of said sealing rings of said first pair of annular sealing rings and one sealing ring of said second pair of annular sealing rings, said housing and the pipe, said third sealed volume being defined by the other sealing rings of said first and second pairs, said housing and pipe, said housing having at least one aperture in said wall for providing a fluid passageway between said second sealed volume and the interior of said housing and at least one aperture in the wall of said housing for providing a fluid passageway between said third sealed volume and the interior of said tube; and

check valve means disposed adjacent said aperture that provides a fluid passageway between said first volume and the interior of said housing for allowing fluid flow only in the direction from the interior of said housing into said first sealed volume.

4,375,764

LIQUID LEVEL SYSTEM

Victor N. Lawford, and Robert R. Austin, both of Pasadena, Calif., assignors to ITT, New York, N.Y.

Filed May 11, 1981, Ser. No. 262,500
Int. Cl.³ G01F 23/16
U.S. Cl. 73—301 19 Claims

18. An apparatus for measuring the level of liquid in a tank which may operate at a relatively high pressure and a temperature of about 650° F. comprising:

(a) lower and upper sensors being adapted to be mounted adjacent to a relatively low liquid level and a relatively high liquid level, respectively, in a tank;

(b) each said sensor including a pressure sensitive diaphragm defining a chamber therein;

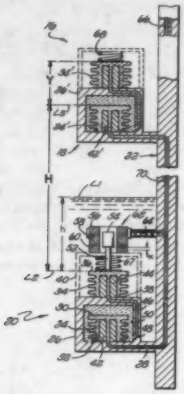
(c) a conduit providing flow communication between said chambers of said lower and upper sensors;

(d) a liquid filling said chambers and said conduit;

(e) said liquid remaining in liquid phase at said temperature even if pressure in the tank is lost; and

(f) means operatively associated with one of said diaphragm means for producing an electrical output signal propor-

tional to the difference between the pressures at the respective locations of said two diaphragm means, said



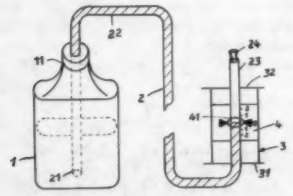
difference being a function of the level of liquid in the tank.

4,375,765

LEVEL INDICATING DEVICE

Joseph From, 31 rue de Champs de Mars, 1050 Brussels, Belgium

Filed Dec. 1, 1980, Ser. No. 211,928
Claims priority, application Belgium, Nov. 30, 1979, 198380; Mar. 27, 1980, 199989
Int. Cl.³ G01C 5/04
U.S. Cl. 73—432 HA 18 Claims



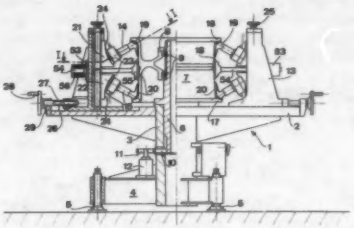
1. A measuring device comprising:
a flexible vessel;
a measuring liquid contained in said vessel;
a transparent flexible tube having first and second ends, a first end of said tube being inserted in said vessel to a point below the level of the said liquid therein, the second end of said tube being opened to the ambient atmosphere when the device is in use, the volume of said tube being not greater than the volume of said vessel;
means for selectively hermetically sealing said vessel whereby liquid may be forced from the sealed vessel into said tube by compression of said vessel and the hermetic seal subsequently removed to expose the surface of the liquid in said vessel to the ambient atmosphere; and
means for providing an indication of the level of liquid in said tube adjacent the second end thereof.

4,375,766

DEVICE FOR TESTING RIMS OF WHEELS

Roger Papay, Bourg-la-Reine, France, assignor to Messier-Hispano-Bugatti, Montrouge, France

Filed Nov. 6, 1980, Ser. No. 204,593
Claims priority, application France, Dec. 19, 1979, 79 31093
Int. Cl.³ G01N 3/36; G01M 17/00
U.S. Cl. 73—809 17 Claims



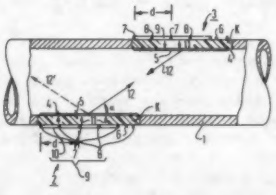
1. A device for testing a wheel having a hub and a flanged rim adapted to receive a beaded tire comprising:
means for positioning said rim;
means for holding said rim in place; and
means for applying cyclic loads simulating rotation of said wheel on the part of said rim receiving the bead of said tire, the amplitude value of said loads representing the spectrum of forces actually received by a rim during use on a vehicle or aircraft.

4,375,767

FLOW-THROUGH FLOW METER WITH ULTRASOUND

Valentin Magori, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed May 27, 1981, Ser. No. 267,567
Claims priority, application Fed. Rep. of Germany, May 28, 1980, 3020282
Int. Cl.³ G01F 1/66
U.S. Cl. 73—861.18 15 Claims



14. A flow-through flow meter system, comprising: a pipe line; two ultrasonic transducer means for transmission and reception of ultrasonic radiation installed in the pipe line and wherein said ultrasonic radiation is directed relative to an axis of the pipe line at an angle α through a medium flowing between the transducer means in the pipe line; each of said transducer means being designed so that they conform to an interior wall of the pipe and do not substantially disturb the medium flowing in the pipe line; each transducer means having an interdigital structure associated with a piezo-electric body of the transducer, a thickness of the transducer body being smaller than half a wavelength of the ultrasonic radiation in a material of the transducer body; a periodicity of the interdigital structure satisfying a condition

$$d=\lambda/\cos\alpha$$

where d is the periodicity of the interdigital structure, and λ is

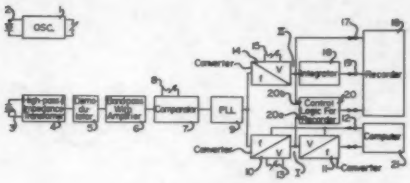
a wavelength in the flowing medium in the pipe line; and means for coupling an excitation voltage to the transducer means of frequency f which corresponds with ultrasonic radiation at an angle α given periodicity d.

4,375,768

ELECTRONIC CIRCUIT FOR PROCESSING THE MEASURED VALUES FROM A VORTEX SEQUENCE PRODUCED BY A KARMAN VORTEX PATH

Martin Beck, Nordenham; Wolfgang Höht, and Udo Mashold, both of Berlin, all of Fed. Rep. of Germany, assignors to Auergesellschaft GmbH, Berlin, Fed. Rep. of Germany

Filed Jun. 17, 1981, Ser. No. 274,520
Int. Cl.³ G01F *1/32*
U.S. Cl. 73—861.23 **7 Claims**



1. An electronic circuit for processing the measured values obtained from a vortex sequence produced by a Karman vortex path, the circuit incorporating:

(a) an oscillator which excites an electro-acoustic transducer and acts as a transmitter,

(b) a receiver for receiving signals transmitted from said transmitter,

(c) an amplifier connected in series with said receiver and a demodulator, along with

(d) a data handling circuit for evaluating of signals received therefrom, characterized by

(e) a comparator connected in series with said amplifier, the comparator having a trigger threshold for suppressing spurious signals and for converting sinusoidal input signals into square wave signals,

(f) a PLL-circuit connected in series with said comparator for filtering-out a mean value from the low frequency frequency spectrum and for improving the pulse width-repetition ratio of the square wave impulses,

(g) a parallel connected computer branch I and recorder branch II connected in series with the PLL-circuit,

(h) an adjustable frequency transforming arrangement connected in series in the computer branch with the computer for balancing the circuit, and consisting of a frequency-voltage converter and a voltage-frequency converter,

(i) an additional adjustable frequency-voltage converter connected in the recorder branch in series with the recorder and an integrator, along with

(j) a control logic inserted between the computer branch and the recorder branch and which, after activating the computer, starts the recorder only when signals which can be evaluated are present.

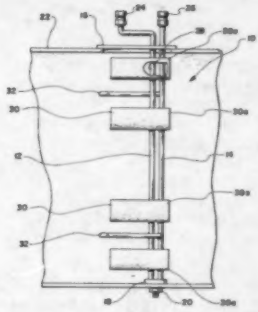
4,375,769

TRANSVERSE-DUCT INSERTION TYPE PRESSURE AVERAGING PRIMARY

Robert O. Brandt, Jr., Garner, N.C., assignor to Brandt Industries, Inc., Fuquay, N.C.

Filed Jul. 6, 1981, Ser. No. 280,790
Int. Cl.³ G01F *1/46*
U.S. Cl. 73—861.66 **5 Claims**

1. An elongated transverse type pressure averaging primary system adapted to be inserted and mounted transversely within an air duct for sensing both total and static pressure of fluid flow within the duct, said pressure averaging primary system comprising: mounting plate means having inner and outer faces adapted to be connected to said duct; an elongated high pressure line secured to said mounting plate means and extending from said inner face of said mounting plate outwardly therefrom towards an opposite wall of said duct where said high pressure line includes a closed terminal end opposite said mounted plate means, said high pressure line further including an exiting opening opposite said closed terminal end; an elongated low pressure line secured to said mounting plate means and extending outwardly therefrom towards an opposite wall of said duct where the same includes a closed terminal end opposite said mounting plate means, said low pressure line further including an exiting opening opposite said closed terminal end; total pressure port means selectively spaced along said elongated high pressure line and communicatively connected therewith such that said port means acts to sense total pressure at selected points along said high pressure line such that the pressure signal emitted from said exiting end of said elongated high pressure line generally represents the average total pressure sensed by said total pressure port means; static pressure sensing means associated with said low pressure line and communicatively connected therewith for sensing static pressure of the fluid flow passing within said duct such that the pressure signal emitted from said exiting end of said low pressure line is representative of the static pressure of the fluid flow within said duct; support means associated with the end of said pressure averaging primary system opposite said mounting plate means for operatively connecting said primary system to said duct opposite the connection of said mounting plate means; interconnecting reenforcing means interconnecting said high and low pressure lines at selected points along their span; said interconnecting reenforcing means including shroud means secured to said high pressure line about selected port means formed therein so as to shroud and protect the respective port means; and wherein said shroud means includes extension means integrally formed therewith and extending therefrom for extending to said low pressure line and connecting therewith for structurally reenforcing said elongated insertion type primary and for directly coupling said high and low pressure lines together so as to form a rigid structure throughout the span of said primary system.



4,375,770

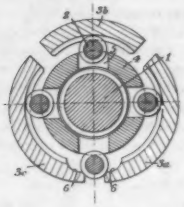
RELEASABLE SCREW AND NUT BEARING MECHANISM

Clair Druet, Brison Saint-Innocent, France, assignor to La Technique Integrale, Societe Anonyme Francaise, Chambery, France

Filed Sep. 9, 1980, Ser. No. 185,574
Claims priority, application France, Sep. 11, 1979, 79 22638
Int. Cl.³ F16H *1/18, 55/17*
U.S. Cl. 74—424.8 A **6 Claims**

1. A releasable screw and nut bearing mechanism comprising a central internal threaded screw, an external nut coaxial therewith and provided with internal threads or circular

grooves forming a socket, the outer diameter of the screw being smaller than the inner diameter of the nut in order to provide a free annular gap therebetween, a plurality of rolling members provided with threads or circular grooves on their outer peripheral surfaces disposed at spaced angular intervals in said annular gap and in engagement simultaneously with the external threads of the screw and the internal threads or grooves of the socket, means for recycling the rolling members to bring them into their original position when the relative angular movement of the screw in the socket has caused an



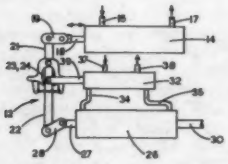
axial movement of said rolling members equal to a thread of the screw, said socket comprising segments adapted to move radially apart to a disengaged position wherein the screw is free from any engagement with said rolling members at any time, whether the mechanism is stationary or rotating indifferently in one or the other direction, irrespective of the axial load applied thereto, and means which automatically cause re-engagement of the rolling members with the screw and the socket when the component parts of the socket are brought by axial centripetal movement to an initial operating position.

4,375,771

RESILIENT CONTROL LINK ASSEMBLY

Jacob Kobelt, 6110 Oak St., Vancouver, British Columbia, Canada V6M 2W2

Filed Jan. 27, 1981, Ser. No. 228,764
Int. Cl.³ G05G *1/04*
U.S. Cl. 74—470 **11 Claims**



1. A resilient control link assembly cooperating with a fulcrum means and being adapted to transmit a mechanical signal from a transmitter to a receiver, the control link assembly having:

(a) first and second link elements hinged together at a main hinge for swinging thereabouts relative to each other and adapted to be disposed relative to each other in a datum relationship; the transmitter and the receiver each cooperating with at least one of the link elements,

(b) a pair of following members, each following member being hinged to the first link element for rotation about a follower hinge spaced from the main hinge, and each following member also having a first contact portion disposed on a side of the main hinge remote from the follower hinge, so that at least one particular contact portion is adapted to contact the second link element,

(c) resilient means interconnecting the two following members to force at least the particular contact portion into engagement with the second link element so as to maintain the link elements in the datum relationship,

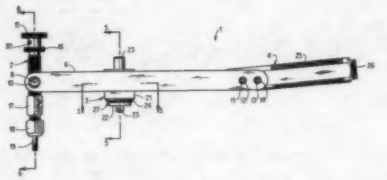
so that when there is relative angular movement between the link elements to disturb the datum relationship therebetween, the following members are moved apart and the resilient means opposes this movement and forces the particular contact portion against the second link element, thus tending to draw the link elements back into the datum relationship.

4,375,772

SCREW ANCHOR SCREW REMOVAL DEVICE

Neil C. Brackett, Hanahan, and William W. Kester, Charleston, both of S.C., assignors to Margaret M. Milhouse, Charleston Heights, S.C.

Filed Feb. 5, 1981, Ser. No. 231,764
Int. Cl.³ B25B *23/00*
U.S. Cl. 81—462 **32 Claims**



1. A device for removing a plurality of screws from a surface utilizing a threaded screw opening in said surface comprising:

a. a structure;

b. a screw anchor assembly, adjustably and pivotably mounted on said structure and operative to be secured in said threaded screw opening, comprising:

(1) an anchoring screw operative to be secured into said threaded screw opening;

(2) anchoring screw turning means rigidly securable to said anchoring screw operative to move said anchoring screw to be secured into or removed from said threaded screw opening; and

(3) height adjustment means adjustably and pivotably mounted on said structure and operative to vary the height of said screw anchor assembly with respect to said structure and, therefore, the distance of said anchoring screw from said structure, said height adjustment means operating independent of the movement of said anchoring screw turning means, with said anchoring screw turning means secured within said height adjustment means;

c. a screw removal assembly adjustably mounted on said structure operative to be pressed into the top of one of said plurality of screws;

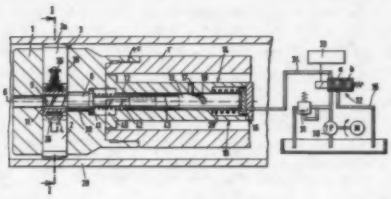
d. driving means secured to said screw removal assembly operative to move said screw removal assembly in order to remove said one of said plurality of screws from said surface; and

e. wherein said screw anchor assembly further comprises an anchoring screw retaining member operable to hold said anchoring screw and securable to said anchoring screw turning means, wherein said anchoring screw retaining member has a sloped lower section whereby said anchoring screw may have a screw head of varying dimensions and still properly be secured in said anchoring screw retaining member, whereby said anchoring screw is held rigidly in said screw anchor assembly when said anchoring screw is placed into said anchoring screw retaining member, and said anchoring screw retaining member is rigidly secured to said anchoring screw turning means,

whereby said screw removal assembly can be positioned over any of said plurality of screws remaining for removal purposes by utilizing said threaded screw opening or

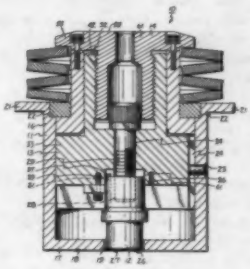
another threaded screw opening in said surface which might be created by removal of any one of said plurality of screws.

4,375,773
OSCILLATING CUTTING TOOLHEAD
Manfred Liermann, Erkelenz, Fed. Rep. of Germany, assignor to Wilhelm Hegenscheidt Gesellschaft mbH, Erkelenz, Fed. Rep. of Germany
Continuation-in-part of Ser. No. 126,905, Mar. 3, 1980, abandoned. This application Sep. 9, 1980, Ser. No. 185,602
Claims priority, application Fed. Rep. of Germany, Mar. 16, 1979, 2910341
Int. Cl.³ B23B 29/034
U.S. Cl. 82—1.2 5 Claims



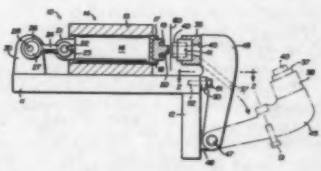
1. In a boring tool, a combination comprising a toolhead having a longitudinal axis and being provided with a slot extending transverse to said axis; a pair of oppositely directed cutting knives floatably mounted in said slot and movable away from each other to a cutting position and toward each other to an inactive position, each of said cutting knives having an outer cutting edge and an inner end face opposite a corresponding end face of the other cutting knife; biasing means connected to said cutting knives for biasing the same toward each other to said inactive position; a spacer disposed between said cutting knives and in engagement therewith, said spacer being generally circular in transverse section and including two parallel, axially directed flattened portions, said spacer being fixed against movement along but rotatable about the longitudinal axis of said toolhead to move said knives away from each other against the action of the biasing means; a rectangular recess formed in said spacer, said recess having transversely directed guide edges parallel to said flattened portions of said spacer, a rotary and axially movable dog member including a drive portion disposed within said recess of said spacer, means in said toolhead supporting said dog member during rotation and axial movement thereof, spring means in said toolhead to normally bias said dog member axially toward said recess said dog member including side edges slidingly engaging said recess guide edges, the transverse extent of said drive portion being less than the transverse length of said recess, thereby to couple said dog and spacer for rotary motion while permitting limited floating movement of said parts when said flattened portions of said spacer are parallel to the direction of floating movement of said cutting knives, drive means for rotating said dog member and coupling means between said drive means and said dog member permitting limited axial movement of said dog member and limited transverse movement thereof, shoulder means in said toolhead for selective engagement with said dog member when it is in its retracted position against the spring means to retain the dog member against axial movement, a hand tool access opening in a face of the toolhead to permit a hand tool to be inserted therein to engage and manually shift said dog member axially and then transversely in the toolhead into engagement with said shoulder means wherein said drive portion is clear of said spacer, said cutting knives in the cleared position of said drive portion being removable from said toolhead.

4,375,774
ADJUSTABLE PUNCH HEAD
Kenneth J. Wilson, Roseville, and Ronald G. Rosene, Anoka, both of Minn., assignors to Wilson Tool Company, White Bear Lake, Minn.
Continuation of Ser. No. 107,880, Dec. 26, 1979, abandoned. This application Aug. 21, 1981, Ser. No. 294,977
Int. Cl.³ B26F 1/14
U.S. Cl. 83—140 7 Claims



1. A punch assembly comprising a punch guide having an exterior spring support shoulder, a punch driver carried within the punch guide and moveable axially therein between upper and lower positions during a punching operation, a punch tip carried by the punch driver, a punch head attached to the punch driver and including a top and means defining constantly spaced upper and lower punch head flanges, a spring support ring bearing against the spring support shoulder and against the lower punch head flange when the punch driver with its attached punch head is in its upper position, and a compression spring seated at its upper end against the upper punch head flange and at its lower end against the support ring to render constant the spacing between the punch head top and the spring support shoulder of the punch guide when the punch driver is in its upper position.

4,375,775
STAMPING PRESS DIE SUPPORT MOUNTING
Louis J. Franz, 313 Crane Ave., Royal Oak, Mich. 48067
Filed Mar. 26, 1981, Ser. No. 247,725
Int. Cl.³ B26F 1/14; B21D 28/34
U.S. Cl. 83—564 4 Claims



1. In a horizontally axised stamping press having a horizontal bed and a reciprocating press head mounted upon the bed for horizontal reciprocating movement along a press axis; with a die support member arranged in alignment with the press axis, and opposing die members removably mounted upon the press head and die support member for relative movement together and apart for thereby engaging and stamping sheet metal positioned between the die members, the improvement comprising:

a vertically arranged arm pivotally connected to the bed at a considerable distance below the press axis, with the die support member mounted upon the upper end of the arm, and with the arm being pivotable about a horizontal axis

which is transverse to the press axis, to swing the die support along an arc downwardly away from the press head so that its die member is generally upwardly oriented for thereby removing and replacing said die member when desired;

and a screw receiving member formed on said arm for horizontal alignment with a horizontally axised, threaded screw receiving socket formed in the bed adjacent the arm, with a screw interconnecting said screw receiving member and socket and aligned parallel to, but spaced downwardly from, the press axis, so that tightening the screw moves the arm towards the press head with the die support member and its die member thereby maintaining their horizontal press axis alignment during said screw tightening.

4,375,776

TONE PROPERTY CONTROL DEVICE IN ELECTRONIC MUSICAL INSTRUMENT

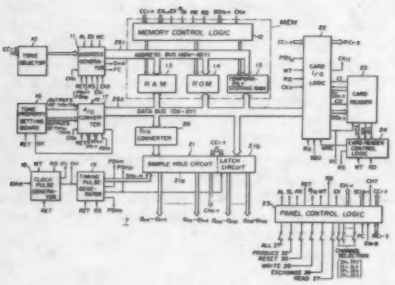
Eisaku Okamoto, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Japan

Filed Jul. 26, 1978, Ser. No. 928,153

Claims priority, application Japan, Aug. 4, 1977, 52-93515; Aug. 4, 1977, 52-93516; Aug. 4, 1977, 52-93517; Aug. 4, 1977, 52-93518; Aug. 4, 1977, 52-93519

Int. Cl.³ G10F *1/00*

U.S. Cl. 84—1.03 **7 Claims**



1. An electronic musical instrument comprising:

a musical tone forming circuit including a plurality of musical tone forming channels each for producing a musical tone signal having tone properties;

means for delivering, in a time division multiplexed fashion, digital signals designating the tone properties of the musical tone signals to be produced in said musical tone forming channels;

a random access memory storing digital signals for each of said musical tone forming channels and connected to said delivering means for storing said digital signals;

an external memory;

external memory input/output means connected to said random access memory and said external memory for transferring the stored contents in said random access memory to said external memory and the stored contents in said external memory to said random access memory;

control means connected to said random access memory and said external memory input/output means for controlling said transferring operation in a manner that when said control means transfers the stored contents of said random access memory to said external memory, tone property information along with a corresponding channel code for a given channel is stored at an arbitrary location in said external memory, and when said control means designates tone property information to be read out, a digital word is transferred to the external input/output means indicating the tone property information by a channel code, said information being identified in the external memory by its channel code only;

a digital to analog converter for converting said digital signals into a time division multiplexed analog signal; and

a demultiplexer for converting said time division multiplexed analog signal into parallel analog signals;

said demultiplexer being connected to said musical tone forming circuit and establishing the tone properties of the musical tone signals produced in the respective channels in accordance with said parallel analog signals.

4. An electronic musical instrument comprising:

a musical tone forming circuit for producing musical tone signals having tone properties;

a random access memory for storing digital words designating the properties of the musical tone signals to be produced in said musical tone forming circuit;

tone property establishing means connected to said random access memory and said musical tone forming circuit for reading out said digital words and establishing the properties of the musical tone signals according to said digital words;

a semiconductor read only memory storing predetermined digital words representing standard properties for the musical tone signals;

control means connected to said read only memory and said random access memory for commanding the transfer and writing of said digital words in said read only memory in substantially unmodified form into said random access memory; and

switch means for triggering said control means to command said transfer and writing.

7. An electronic musical instrument comprising:

a musical tone forming circuit for producing musical tone signals having tone properties;

a first random access memory for storing digital words designating the properties of the musical tone signals to be produced in said musical tone forming circuit;

tone property establishing means connected to said first random access memory and said musical tone forming circuit for reading out said digital words and establishing the properties of the musical tone signals according to said digital words;

a second random access memory;

control means connected to said first and second random access memory for carrying out the exchange of a first digital word at a first address with a second digital word at a second address in said first random access memory by moving said first and second digital words to separate addresses in said second random access memory and then moving back said first digital word to said second address and said second digital word to said first address; and

switch means for triggering said control means to command said exchange.

4,375,777

ELECTRONIC MUSICAL INSTRUMENT

Tetsuo Nishimoto, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 91,341, Nov. 5, 1979, abandoned. This application Oct. 20, 1981, Ser. No. 313,334

Claims priority, application Japan, Nov. 11, 1978, 53-139184

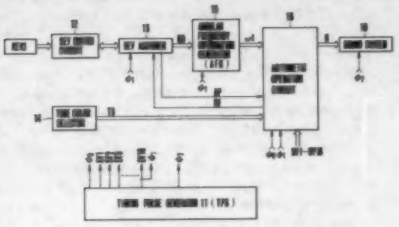
Int. Cl.³ G10H *1/08, 1/12, 7/00*

U.S. Cl. 84—1.19 **17 Claims**

1. In an equipment for developing a waveshape and modifying the waveshape to produce a musical tone signal in a desired frequency range, the improvement of a system for generating a composite waveshape having n possible components of different frequency in the amplitude of any sample point of the waveshape, comprising:

first means for generating a function f(x) containing a time variable;

second means for generating a waveshape F(x) in accordance with the equation



$$F(x) = \frac{\sin \frac{n \cdot f(x)}{2} \cdot \sin \frac{(n+1) \cdot f(x)}{2}}{\sin \frac{f(x)}{2}}$$

wherein n is an integer greater than one and represents the number of harmonic components constituting the waveshape F(x);

third means for modifying the harmonic components of said waveshape F(x) and for generating, by the use of said function f(x), a modifying signal in accordance with the expression

$$\sum_{i=1}^{m} \sin Hi \cdot f(x)$$

wherein m satisfies the condition $1 \leqq m < n$ and Hi is the order of each harmonic component to be modified; and

fourth means for modifying selected ones of the harmonic components of the waveshape F(x) in accordance with said modifying signal to produce a musical tone signal.

4,375,778

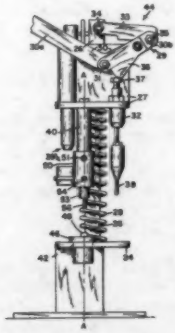
RELOADER

Bruce A. Ryan, 68 Racicot Ave., Webster, Mass. 01570

Filed Jun. 4, 1981, Ser. No. 270,585

Int. Cl.³ F42B 33/10

U.S. Cl. 86—36 **10 Claims**



1. Reloader for a shotgun primer housing having a cylindrical side wall, a top wall with a central aperture, a bottom opening and an outer annular flange extending about the bottom opening, the spent primer to be removed from the housing and the new primer to be inserted in the housing being of the type which is a complete primer assembly consisting of a striker portion mounted in a main body portion, said reloader comprising:

(a) a supporting base including a horizontal platform;

(b) a vertical supporting column extending upwardly from the platform;

(c) a carriage slidably mounted on the column for vertical motion;

(d) actuating means for reciprocating the carriage toward and away from the platform;

(e) a primary anvil mounted on the platform and having:

(1) an upper surface,

(2) a cylindrical hole extending downwardly from the upper surface and having a larger diameter than the annular flange of the primer housing,

(3) a horizontal annular ledge at the bottom of said hole and located above said discharge opening for supporting the annular flange of a primer housing in the upright position in which the aperture faces upwardly for removal of the spent primer, and

(4) a discharge opening below said annular ledge for receiving a spent primer which is dislodged from the housing;

(f) a secondary anvil having:

(1) a bottom surface which rests on the upper surface of the primary anvil,

(2) a locating pin extending downwardly from the bottom surface and being insertable into the hole of the primary anvil,

(3) a top surface, and

(4) a cylindrical cavity in the top surface for receiving a primer housing in the inverted position in which the bottom opening faces upwardly so that the annular flange remains above the top surface to enable a new primer to be inserted into the housing, said primary and secondary anvils constituting anvil means which are effective to maintain the aperture and bottom opening of the housing in vertical alignment with a vertical axis;

(g) a punch having an elongated tip portion which is capable of entering the primer housing aperture, said punch being removably attachable to the carriage so that downward movement of the carriage causes the tip portion to move downwardly along said vertical axis into the aperture of a primer housing supported on the anvil in the upright position for dislodging the spent primer from said housing into the bottom opening; and

(h) a ram having a flat ramming surface and being removably attachable to the carriage so that downward movement of the carriage causes the flat ramming surface to move downwardly along said vertical axis for engaging a new primer placed in the bottom opening of a primer housing which is supported on the anvil means in the inverted position and for ramming the new primer into the housing.

4,375,779

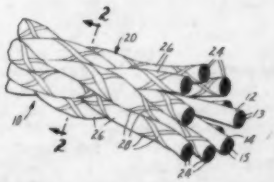
COMPOSITE SEWING THREAD OF CERAMIC FIBERS

Edward M. Fischer, White Bear Lake, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Apr. 24, 1981, Ser. No. 257,401

Int. Cl.³ D04C 1/02, 1/12; D02G 3/16, 3/46

U.S. Cl. 87—6 **20 Claims**



1. A composite sewing thread comprising:

a central core having one or more strands of inorganic or organic fibers or blends thereof, and

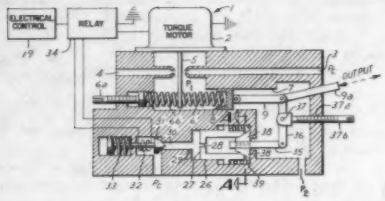
an outer jacket enclosing said core and having the form of a tubular body of braided strands of continuous ceramic fibers, said braided strands being served with fibers selected from inorganic and organic fibers.

4,375,780

FAIL-FIXED ELECTROHYDRAULIC SERVOSYSTEM

Donald Y. Davis, Cincinnati, Ohio, assignor to General Electric Company, Cincinnati, Ohio

Filed Jan. 28, 1980, Ser. No. 115,985
Int. Cl.³ F15B 15/26
U.S. Cl. 91—42 11 Claims



1. A fail-fixed electrohydraulic servosystem for positioning a component to be controlled in response to an electrical input comprising:

(1) an electrohydraulic servovalve including a translatably positionable servopiston having an end connectable to the component to be controlled, the position of said servopiston being proportional to the electrical input;

(2) linkage means including a lever arm having first and second end portions and an intermediate portion disposed therebetween, said first end portion being pivotably connected to said servopiston and said intermediate portion being pivotably connected to a fulcrum member connected to a fixed member;

(3) a rod having first and second end portions, said first end portion being pivotably connected to said second end portion of said lever arm; and

(4) locking means cooperating with said second end portion of said rod for securing said rod in a fixed position when the electrical input varies from a predetermined range, thereby fixing said servopiston in a locked position, including:

(a) a cylinder having a conduit providing communication of hydraulic fluid from a pressurized source thereof, containing a piston translatably actuatable in response to fluid pressure in said cylinder and receiving slidably said second end portion of said rod;

(b) means including a valve in said conduit operative when the electrical input to said servosystem varies from said predetermined range to open said valve to effect a translatory actuation of said piston; and

(c) a frictional locking member cooperating with said second end portion of said rod and said piston and effective for frictionally locking said rod relative to said cylinder upon actuation of said piston.

4,375,781

DOUBLE-ACTING HYDRAULIC PRESS

Michio Bessho, 644 Bessho, Besshocho, Himeji, Hyogo, Japan

Filed Nov. 5, 1980, Ser. No. 204,331
Claims priority, application Japan, Nov. 12, 1979, 54-146939
Int. Cl.³ F01B 7/20
U.S. Cl. 92—52 3 Claims

1. An hydraulically actuated press comprising:

a support frame including a first cylinder therein;

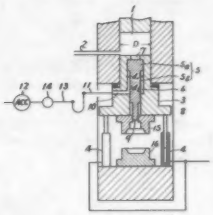
ram means having one end portion disposed within said cylinder and comprising a first piston;

a bore structure extending axially completely through said ram means, said bore structure being of restricted diameter at each end to thereby define an intermediate larger diameter bore section comprising a second cylinder;

a second piston, the second piston being disposed in said second cylinder and having one end operatively associated with the structure forming one of said restricted diameter bore ends, through which said second piston is exposed to the first cylinder and which said one restricted bore end functions as a stop means for said second piston;

said second piston being of reduced diameter excepting for said one end and the reduced diameter portion being reciprocally disposed in fluid-tight relationship in the second of said restricted diameter bore ends;

a tool element extending from a free end of the reduced diameter portion of the second piston and having a path of motion extending from within the ram means to through a face of the second end of the ram means;



said face comprising a tool means operatively associated with said tool element;

means to feed pressurized hydraulic fluid to said first cylinder, whereby to exert motive force to said first piston and, through said one restricted diameter bore end, to impart motive force to said second piston;

means to controllably pressurize and feed hydraulic fluid to the second cylinder at a location coinciding with the reduced diameter section of the second piston whereby the motive forces to said tool element may be variably apportioned;

means on said frame to support material to be operated on by each of said tool means and tool element; and

means, separate and distinct from the afore recited hydraulic feed means to return said ram and second piston to an initial disposition following a working stroke.

4,375,782

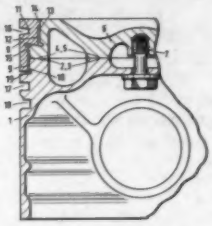
COMPOSITE PISTON FOR INTERNAL COMBUSTION ENGINES

Gerhard Schieber, Bad Wimpfen, Fed. Rep. of Germany, assignor to Karl Schmidt GmbH, Neckarsulm, Fed. Rep. of Germany

Filed Apr. 8, 1980, Ser. No. 138,462
Claims priority, application Fed. Rep. of Germany, Apr. 10, 1979, 2914456
Int. Cl.³ F02F 3/00
U.S. Cl. 92—176 3 Claims

1. In a composite piston for internal combustion engines having a lower part with an upper rim and an upper part with an upper rim, the upper part composed of ferrous material and joined together with the lower part by a centering screw-threaded ring having an upper rim and a lower rim, the improvement wherein the screw-threaded ring comprises internal screw threads adjacent the lower rim thereof and an internal annular rib adjacent the upper rim thereof, the lower part of the piston has a corresponding annular recess adjacent its upper rim configured to enable the screw-threaded ring to be screwed onto the upper rim of the lower part of the piston and the upper part has an annular recess in the upper rim thereof configured to receive the internal annular rib when the screw

threaded ring is screwed onto the lower part, with the axially extending and readily extending boundary surfaces of the internal rib forced against the confronting boundary surfaces



of the annular recess of the upper part and wherein the internal annular rib includes a lip at its upper edge to define a gap between a portion of the axially confronting surfaces and which shields the gap from the combustion chamber.

4,375,783

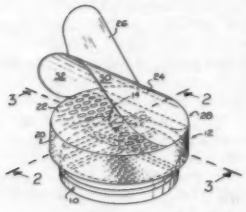
CHIMNEY TOP SPARK ARRESTER

Lester L. Young, 961 Mitchell Canyon, Clayton, Calif. 94517; Thomas R. Young, 1413 Andover Ct., Fairfield, Calif. 94533, and Michael A. Young, 2689 Shady Dr., Pinole, Calif. 94564

Filed May 15, 1981, Ser. No. 264,106

Int. Cl.³ F23L *17/10;* **F23J** *15/00*

U.S. Cl. 98—70 **7 Claims**



1. A chimney top spark arrester comprising:

(a) A base assembly including a solid impermeable sidewall portion, said assembly being adapted for attachment to a chimney top;

(b) A rotatable assembly including a permeable sidewall portion; a permeable top portion; a saddle shaped member attached to said top portion having an upper surface and an undersurface, a substantially vertical fin attached to said upper surface of said saddle shaped member to orient a windward section of said permeable sidewall portion towards a prevailing wind, said saddle shaped section being attached to said top portion proximate said windward section of said permeable sidewall portion; and a deflection plate attached within said permeable sidewall portion proximate said windward section for deflecting wind through said top portion against said saddle shaped member to create a low pressure venturi effect at an upper surface of said top portion; and

(c) Pivot means coupling said base assembly to said rotatable assembly whereby said rotatable assembly can freely rotate above said base assembly.

4,375,784

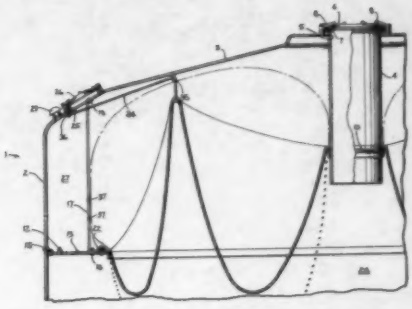
DIAPHRAGM TYPE BREATHER SYSTEM FOR SEALED STORAGE STRUCTURE

Lauris Kalnins, Bloomingdale, Ill., assignor to A. O. Smith Harvestore Products, Inc., Arlington Heights, Ill.

Filed Oct. 19, 1981, Ser. No. 312,735

Int. Cl.³ A01F *25/00, 25/14, 25/22*

U.S. Cl. 99—646 S **21 Claims**



1. A sealed storage structure having an improved breather system, comprising a vessel to contain a stored material and including a wall and a roof enclosing the upper end of the wall, an impervious sealed structure extending transversely across the vessel and dividing the vessel into an upper chamber and a lower storage chamber, inlet means for introducing a stored material into the storage chamber, said sealed structure comprising a rigid impervious generally horizontal platform secured in sealed relation to said wall and a flexible diaphragm sealed to said platform, and outlet means in the vessel providing communication between said upper chamber and the atmosphere, pressure differentials between the storage chamber and the atmosphere causing said diaphragm to flex to thereby balance said pressure differential.

4,375,785

METHOD AND APPARATUS FOR ACHIEVING THERMAL STABILITY IN A PRESS

Daniel A. Schoch, Minster, and Terry L. Wissman, New Bremen, both of Ohio, assignors to The Minster Machine Company, Minster, Ohio

Filed Sep. 8, 1981, Ser. No. 299,833

Int. Cl.³ B30B *13/00, 15/04*

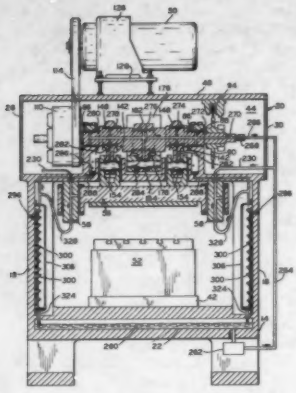
U.S. Cl. 100—35 **17 Claims**

11. In a mechanical press having a crown, a bed, uprights connecting the crown and bed and a crankshaft and connection arm assembly for reciprocating a slide along a direction substantially parallel to the uprights, a method for preventing a change in press shutheight due to elongation of the connection arms as the press heats up comprising:

circulating a liquid lubricant in the crown over the crankshaft and connection arm assembly thereby causing the lubricant to absorb waste heat from the crankshaft and connection arm assembly,

flowing the lubricant from the crown to a thermal transfer device on each of the uprights and causing a controlled amount of the waste heat absorbed by the lubricant from the crankshaft and connection arm assembly to be transferred to the uprights, the amount of heat transferred to

the uprights being controlled so that the change in temperature of the uprights causes the uprights to elongate due to



thermal growth at the same rate as the connection arms elongate due to thermal growth.

4,375,786

DEVICE FOR BALING CROP

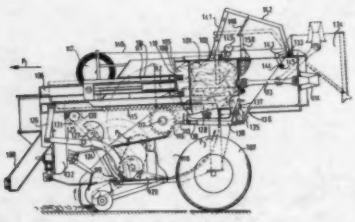
Pieter A. Oosterling, Nieuw-Vennep, and Adriaan Van Zweeden, Rijsenhout, both of Netherlands, assignors to Expert N.V., Willemstad, Netherlands Antilles

Continuation of Ser. No. 940,670, Sep. 8, 1978, abandoned. This application Nov. 7, 1980, Ser. No. 204,865

Claims priority, application Netherlands, Sep. 9, 1977, 7709962; Jul. 20, 1978, 7807779

Int. Cl.³ B30B *1/06, 7/04*

U.S. Cl. 100—189 17 Claims



5. A device for baling a crop such as grass or the like, comprising in combination:

a mobile frame defining a generally horizontal baling chamber having an end wall against which the crop is to be compressed and having a laterally facing inlet opening spaced from said end wall;

a ram reciprocable within said baling chamber toward and away from said end wall and drive means for reciprocating said ram between a retracted position clearing said inlet opening and an extended position adjacent said end wall;

an auxiliary chamber communicating with said baling chamber through said inlet opening and feeding means for continuously feeding crop into said auxiliary chamber; and

transfer means for periodically transferring accumulated material from said auxiliary chamber to said baling chamber, said transfer means comprising at least one member rotatable about an axis transverse to the length direction of said baling chamber, said drive means being connected with said transfer means for movement of said member in synchronism with movement of said ram whereby said member sweeps material from said auxiliary chamber into said baling chamber as said ram moves toward said retracted position and thereafter temporarily resides in inlet opening-blocking position while said ram moves toward said extended position.

4,375,787

MACHINE FOR STITCHING THE UPPER BORDER OF SHOES COMMONLY CALLED MOCCASINS

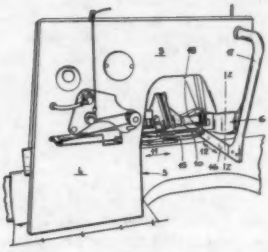
Mario Brutti, Monte Urano, Italy, assignor to Costruzioni Macchine da Cucire Industriali la Mocassino di Berdini Ezio & C.S. n.c., Fermo, Italy

Filed Feb. 4, 1981, Ser. No. 231,372

Claims priority, application Italy, Feb. 22, 1980, 3340 A/80

Int. Cl.³ D05B *15/00*

U.S. Cl. 112—28 20 Claims



1. A machine for stitching the upper border of shoes, such as moccasins, said machine comprising: a base body extending essentially vertically, and being essentially in the form of an inverted "U", and having a front with an overhanging head containing a vertical shaft mounted crochet, said machine being provided with a needle movable horizontally, with reciprocating motion, in two directions towards and away from said crochet, and being given, in time with the latter, transverse translatory motion in a horizontal plane, perpendicular to its own axis, for infeeding of material, said machine being equipped with a dog supported by said overhanging head in front of said crochet, movable horizontally along a vertical plane, virtually perpendicular to said needle and in harmony with the horizontal transverse translatory motion thereof, said dog constituting a movable working surface for the abutment of the edges of a vamp and of a shoe upper to be stitched, and comprising a first presser foot, cantilever-supported horizontally by said body in the immediate vicinity of said needle, and also movable similarly to the latter, horizontally and transversely, to operate in contrast with said dog and to lock the material-shoe uppervamp ensemble and to displace it in time with the horizontal transverse movement of the needle, said machine also comprising a second presser foot, cantilever-supported horizontally by said body to the rear of said first presser foot with respect to the transverse infeed direction of the material, movable horizontally in the two directions and in contrast with said overhanging head in order to lock the material already stitched and carried along by the needle-first presser foot-dog ensemble, said machine further comprising: a virtually flat separator member that extends in a vertical plane parallel to that of said dog, positioned upstream of said needle and designed to separate the vamp from the shoe upper being fed to the needle; a third ruffler presser foot, cantilever-supported horizontally by said body, placed upstream of the first presser foot and movable horizontally in two directions towards and away from said separator member, in contrast therewith, subjected to means for transverse translation in the two directions, along a path parallel to said dog but in the

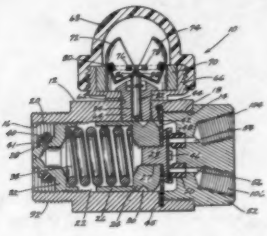
direction opposite to that of the translation of the latter, said third presser foot being provided to lock and ruffle the vamp jointly with said separator member; and a fold-back device cantilever-supported by said body, located above said third presser foot, provided to fold, at the point where said third presser foot is lowered to lock the vamp on the separator, the border of the shoe upper back onto the vamp.

4,375,788

TIRE MONITOR

Jerry P. Malec, Omaha, Nebr., assignor to Allied Transportation Specialties, Inc., Omaha, Nebr.

Filed Jan. 26, 1981, Ser. No. 228,253
Int. Cl.³ B60C *23/04*
U.S. Cl. 116—34 R 10 Claims



1. A tire monitor for use with a pair of pneumatic tires comprising,

a body member having first and second ends, said body member having a first chamber formed therein,

a diaphragm mounted in said first chamber between said first and second ends to define first and second chamber portions,

a spring means in said first chamber portion at one side of said diaphragm yieldably urging said diaphragm towards said first end,

a valve member at the other side of said diaphragm and movable therewith between first and second positions,

a valve cap means secured to said first end of said body member and having a first air passageway formed therein in communication with the interior of one of said tires a second air passageway formed therein in communication with the interior of the other of said tires, and a third air passageway formed therein in communication with said second chamber portion,

valve means connected to said third passageway to permit air under pressure to be supplied to said second chamber portion at times,

said valve member preventing communication between said first and second air passageways when said valve member is in its said first position and preventing communication between said third air passageway and said first and second air passageways when said valve member is in its said first position,

said valve member allowing communication between said first and second air passageways when said valve member is in its said second position and allowing communication between said third air passageway and said first and second air passageways when said valve member is in its said second position,

said spring means yieldably urging said valve member towards its said first position with the air pressure in said first and second air passageways urging said valve member towards its said second position,

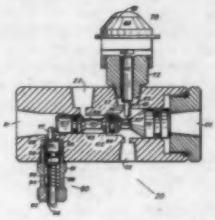
and a one-way exhaust passageway in communication with said first chamber portion to permit air and moisture to escape from said first chamber portion.

4,375,789

FIRST OUT INDICATOR

Ned A. Bergeron, Houma, La., assignor to B.W.B. Controls, Inc., Houma, La.

Filed Aug. 7, 1980, Ser. No. 176,002
Int. Cl.³ F15B *13/04*
U.S. Cl. 116—70 4 Claims



1. An indicator comprising:

I. a housing having bore means substantially there through, said housing also including;

(a) first fluid inlet,

(b) first fluid outlet,

(c) second fluid inlet, and

(d) first fluid exhaust means, said exhaust means including said first fluid outlet and an exhaust port, each of said inlets, outlets and port being in communicating relationship with said bore means;

II. valve means slidable in said bore means between a first position permitting fluid communication between said first fluid inlet and first fluid outlet, and a second position both preventing such fluid communication as well as permitting fluid communication between said first fluid outlet and said exhaust port; and

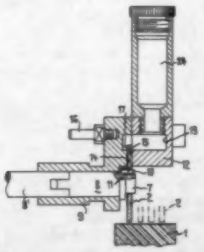
III. removable barrier means for blocking movement of said valve means from its said second position to its said first position, said barrier means being removable by fluid pressure in said first inlet and said valve means being movable from said second position to said first position upon sufficient fluid pressure in said second inlet to overcome said fluid pressure in said first inlet.

4,375,790

OFFSET PRINTER

Fritz Wittwer, 29, Fort St. Jacques, CH-1700 Fribourg, Switzerland

Filed May 13, 1981, Ser. No. 263,314
Claims priority, application European Pat. Off., Jun. 2, 1980, 80810187.7
Int. Cl.³ B05C *1/02*
U.S. Cl. 118—219 3 Claims



1. Offset printer apparatus for printing annular codes of colors on solids of revolution, more particularly on small solids

of revolution such as connector contacts or necks of ampoules, transported on a conveyor, comprising

a common inking cylinder for printing a plurality of rings of colors onto said solids of revolution at a printing position of said conveyor adjacent said inking cylinder,

a plurality of rotatable discs located around at least part of the surface of said inking cylinder, said discs contacting at their peripheries the surface of said inking cylinder for depositing said rings of colors onto said inking cylinder,

driving means for rotating said discs including a driving shaft having a fixed axis, the plane of each said discs being slightly tiltable about a plane perpendicular to said axis, said plane of each disc being determined by close fitting of the disc against axial limitations between which said disc enters free from play into a corresponding color containing chamber of said printer apparatus.

4,375,791

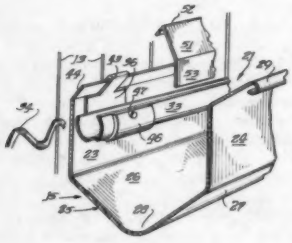
TROUGH FEEDER

William Peppler, Decatur, Ala., assignor to Chore-Time Equipment, Inc., Milford, Ind.

Continuation of Ser. No. 127,595, Mar. 6, 1980, abandoned. This application Jun. 29, 1981, Ser. No. 278,856

Int. Cl.³ A01K 5/00

U.S. Cl. 119—52 AF 6 Claims



5. Apparatus for distributing feed to poultry and the like comprising the combination of a trough for receiving feed and for presenting the received feed to the poultry, a conveyor tube, means for urging feed along the conveyor tube, securing clip means for securing the tube in fixed relation to the trough and pin and recess interconnector means between the securing clip means and conveyor tube to permit said tube to be connected to said securing clip means in any one of a plurality of angular positions, and tube shield means extending over the conveyor tube.

4,375,792

ASYMMETRICAL INTERNAL COMBUSTION ENGINE

Paul Barret, 5 bis, Avenue Beziou, 64140 Billere, France

Filed Jun. 2, 1980, Ser. No. 155,456

Claims priority, application France, Jun. 19, 1979, 79 16185

Int. Cl.³ F02B 75/28

U.S. Cl. 123—51 AA 10 Claims

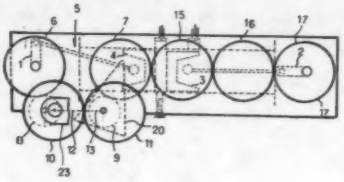
1. An internal combustion engine adapted to be powered by a burnable gas fuel, comprising in combination:

at least one cylinder,

at least first and second pistons reciprocally movable in said cylinder substantially in opposite directions, each piston having a maximum velocity range, and a maximum acceleration range therein,

inlet and outlet valves for controlling the flow of the gaseous fuel into said cylinder, and the exhaust of the burnt fuel therefrom, respectively, and

linkage means connected to said pistons for converting the reciprocating movement thereof into a rotary movement, and including change-of-rate-of displacement and velocity means increasing the rate of velocity in the maximum acceleration range, and for reducing the rate of displacement in the maximum velocity range of one piston with respect to the other piston, at least first and second piston rods pivotably connected to said first and second pistons, respectively, first and second crankshafts pivotably connected to said first and second piston rods, rotatable about first and second axes disposed substantially parallel to, and displaced by a predetermined angle from one another, respectively, and gear means coupling said first and second crankshafts to one another, said gear means including



first and second fixedly mounted gearwheels,

first and second eccentrically mounted gearwheels, and

at least partially position-shiftable coupling means for coupling said first gear wheels and said second gear wheels to one another, respectively, said coupling means including engaging means for meshing said eccentrically mounted gear wheels to one another.

4,375,793

ACTUATOR MECHANISM

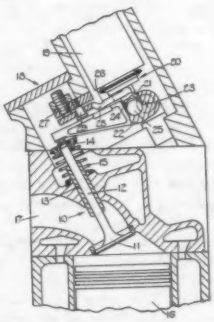
Alec H. Seilly , North Wembley, and Thomas Laity, London, both of England, assignors to Lucas Industries Limited, Birmingham, England

Filed May 30, 1980, Ser. No. 154,956

Claims priority, application United Kingdom, Jul. 6, 1979, 7923686

Int. Cl.³ F01L 9/04

U.S. Cl. 123—90.11 5 Claims



1. An actuator mechanism for imparting movement to a movable member and comprising an electromagnetic device including an output member and a lever mechanism acting, in use, between the output member and the movable member, said lever mechanism comprising a first lever pivotally mounted at one end and arranged, in use, to couple with the movable member at its other end, the output member after an initial movement being operatively connected to said first lever at a position adjacent the pivot axis of the first lever, a second lever, means defining a fulcrum for the second lever adjacent one end thereof, the opposite end of said second lever having a bifurcated end portion for engagement with said output member during the initial movement thereof, and means lo-

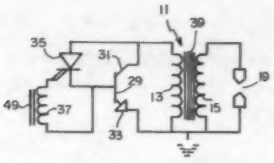
cated intermediate the ends of the second lever and between said position and the other end of the first lever for transmitting movement between the levers during said initial movement of the output member.

4,375,794

EXTERNAL INDUCTIVE SOLID STATE IGNITION SYSTEM

Anthony E. Wasmer, New Holstein, Wis., assignor to Tecumseh Products Company, Tecumseh, Mich.

Filed Nov. 28, 1980, Ser. No. 211,283
Int. Cl.³ F02P 1/08
U.S. Cl. 123—149 C **4 Claims**



1. In an internal combustion engine ignition system of the type having a generally E-shaped magnetic core,

a spark coil with primary and secondary windings positioned on the center leg of the generally E-shaped magnetic core,

at least one spark plug connected to the secondary winding,

means for providing a magnetic field in the magnetic core for inducing a current flow in the primary winding, the magnetic field changing in synchronism with rotation of a part of the internal combustion engine, an improved ignition control circuit of the contactless interrupt type comprising:

a control circuit consisting of a control coil, a power transistor having a collector-emitter circuit connected across the primary winding, and a gate controlled switch connected in controlling relation to the transistor;

said control coil being in close proximity to the spark coil generally intermediate a pair of the E-shaped core legs and influenced by the means for providing a magnetic field to interrupt the magnetic field induced current in the primary winding near the time that current reaches a maximum value by disabling the gate controlled switch and therefore also the transistor and induce a spark creating voltage in the secondary winding.

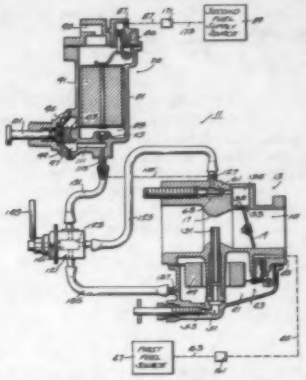
4,375,795

DUAL FUEL SUPPLY SYSTEM

Henry C. Billingsley, Waukegan, Ill., assignor to Outboard Marine Corporation, Waukegan, Ill.

Filed Aug. 4, 1980, Ser. No. 175,348
Int. Cl.³ F02M 1/16
U.S. Cl. 123—187.5 R **3 Claims**

1. A fuel feeding device comprising a housing including a float chamber including float controlled valve means communicable with a source of fuel and operable to control supply of the fuel to said float chamber, a second chamber, duct means extending between said second chamber and said float chamber for supplying fuel to said second chamber from said float chamber, a movable wall located in said second chamber and defining a primer fuel chamber which can be varied in volume and which communicates with said duct means, means adapted for manipulation by an operator and connected to said movable wall for displacing said movable wall to vary the volume of said primer fuel chamber so as to effect fuel flow to and from said primer fuel chamber, check valve means in said duct means permitting fuel flow from said float chamber to said primer fuel chamber and preventing return flow to said float



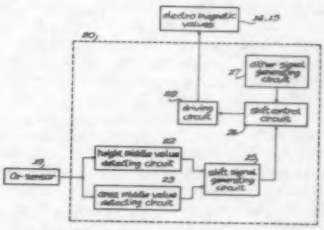
chamber, and an outlet communicating with said duct means between said primer fuel chamber and said check valve means.

4,375,796

AIR-FUEL RATIO CONTROL SYSTEM

Masaaki Ohgami, and Fujio Matsui, both of Musashino, Japan, assignors to Fuji Jukogyo Kabushiki Kaisha, Tokyo and Nissan Motor Co., Ltd., Yokohama, both of, Japan

Filed Mar. 5, 1981, Ser. No. 240,649
Claims priority, application Japan, Mar. 7, 1980, 55-29337
Int. Cl.³ F02D 35/00
U.S. Cl. 123—440 **3 Claims**



1. In an air-fuel ratio control system for an internal combustion engine having an intake passage, an exhaust passage, an air-fuel mixture supply means, an on-off type electromagnetic valve for correcting the air-fuel ratio of the air-fuel mixture supplied by said air-fuel mixture supply means, dither signal generating circuit means for producing a periodical dither signal, a shift control circuit means for shifting the level of the center of said dither signal, driving circuit means, operatively connected to said shift control circuit means, for producing a driving output for said on-off type electromagnetic valve, and an O_2 sensor means for detecting the concentration of oxygen in exhaust gases passing through said exhaust passage and producing an output waveform of output voltage, the improvement comprising

first circuit means for detecting a middle value between the maximum value and the minimum value of the output voltage of the O_2 sensor means in each cycle;

second circuit means for detecting a middle value of the output waveform of said O_2 sensor means between upper and lower portions thereof with respect to a predetermined reference value; and

shift signal generating circuit means for comparing outputs of said first and second circuit means for generating a difference of said outputs as a shift signal;

said shift control circuit means for controlling the air-fuel ratio of the mixture in such a direction that said difference is decreased.

4,375,797

AIR/FUEL RATIO FEEDBACK CONTROL SYSTEM FOR INTERNAL COMBUSTION ENGINES

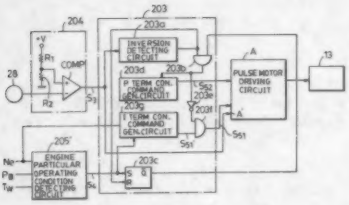
Kazuo Otsuka, Higashikurume; Shin Narasaka, Yono, and Shumpei Hasegawa, Niiza, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 27, 1981, Ser. No. 287,872

Claims priority, application Japan, Aug. 5, 1980, 55-107976

Int. Cl.³ F02B 33/00

U.S. Cl. 123—440 1 Claim



1. An air/fuel ratio feedback control system for performing feedback control of the air/fuel ratio of an air/fuel mixture being supplied to an internal combustion engine, which comprises: an O_2 sensor for detecting the concentration of oxygen in exhaust gases emitted from said engine; fuel quantity adjusting means for producing said mixture being supplied to the engine; and an electrical circuit operatively connecting said O_2 sensor with said fuel quantity adjusting means in a manner effecting feedback control operation to control the air/fuel ratio of said mixture to a predetermined preset value selectively by proportional term control and by integral term control in response to an output signal produced by said O_2 sensor; said electrical circuit comprising in combination: a comparator for comparing the value of said output signal of said O_2 sensor with a predetermined reference value; a circuit responsive to an output produced by said comparator to produce a first command signal for executing proportional term control upon inversion of said output of said comparator, and a second command signal for executing integral term control when said output of said comparator remains at a certain range level; means for detecting predetermined operating conditions of said engine; means responsive to an output of the detecting means indicative of the occurrence of one of said predetermined operating conditions of said engine to interrupt said feedback control operation; and means responsive to an output of said detecting means indicative of the extinction of said one predetermined engine operating condition to cause said command signal output circuit to produce said second command signal.

4,375,798

APPARATUS FOR ALTERNATE LIQUID OR GASEOUS FUEL OPERATION OF INTERNAL COMBUSTION ENGINES

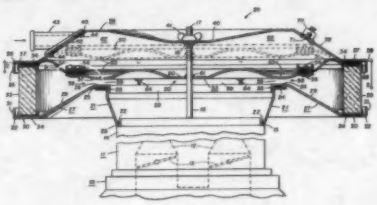
Keith H. Garretson, Salem, Iowa, assignor to Garretson Equipment Co., Inc., Mt. Pleasant, Iowa

Continuation-in-part of Ser. No. 81,842, Oct. 4, 1979, abandoned. This application Mar. 27, 1981, Ser. No. 248,430

Int. Cl.³ F02M 21/02

U.S. Cl. 123—525 18 Claims

1. An attachment for operating an internal combustion engine having an air inlet on liquid or alternately on gaseous fuel, the attachment including a housing having an opening for the air inlet of an internal combustion engine, the housing comprising: first wall means having a first surface portion; second wall means disposed in spaced relation to the first wall means, a face of the second wall means including a second surface portion disposed in opposed spaced relation to said first surface portion, said first and second surface portions defining a passage therebetween for communicating at an upstream end with the atmosphere and at a downstream end with said opening, at least one of said surface portions being reciprocally movable relative to the other surface portion between first and second positions respectively adjacent and more remote from said other surface portion during engine operation on respectively gaseous and liquid fuel, said passage when said one surface



portion is in its first position forming venturi means for controlling supply of gaseous fuel to the engine, said one surface portion when in its second position providing substantially less impedance to flow of air through said passage; a chamber operatively associated with said one surface portion so that movement of said one surface portion between said positions is responsive to difference of fluid pressures in said passage and in said chamber; one or more gaseous fuel outlet ports opening into said venturi means through one of said surface portions and in fluid communication with said chamber during operation of the engine on liquid fuel; and inlet means for supplying gaseous fuel to said outlet ports, said gaseous fuel inlet means being in fluid communication with said chamber during operation of the engine on gaseous fuel.

4,375,799

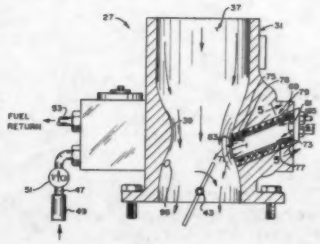
FUEL VAPORIZATION SYSTEM

Clifford S. Swanson, 1420 Gervas, Manchester, Mo. 63011

Filed Apr. 16, 1980, Ser. No. 140,691

Int. Cl.³ F02M 31/02

U.S. Cl. 123—549 8 Claims



1. In an internal combustion engine having an air intake system and means for delivering liquid fuel to said air intake means for introduction of the fuel into the air flowing into the engine, wherein the improvement of this invention comprises: a fuel pump for drawing liquid fuel from a supply of fuel in greater quantity than is required by the engine, for discharging liquid fuel under pressure for delivery to the engine, and for returning excess liquid fuel to said fuel supply, means responsive to the fuel demand of the engine for increasing or decreas-

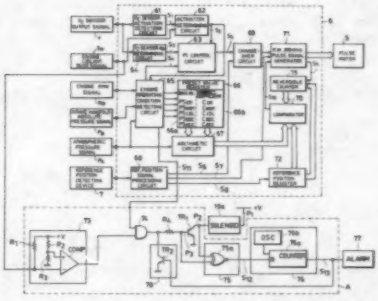
ing the amount of liquid fuel supplied by said fuel pump for said engine thereby to maintain the air/fuel ratio of the air and fuel mixture drawn into the engine within a desired range, means located contiguous to said intake system for heating said liquid fuel to be delivered to the engine and for discharging vaporized fuel directly into the intake system, said heating means including a housing defining a heat chamber into which liquid fuel from said fuel pump is delivered, and electrical resistance heating means for heating the surfaces of said housing defining said heat chamber to a temperature sufficient to vaporize substantially all of the liquid fuel as the liquid fuel is delivered thereto, said housing having a plurality of ports through which liquid fuel is delivered under pressure into said heating means thereby to finely divide said liquid fuel and to aid in the vaporization thereof, said chamber having an outlet in communication with said air intake system and being substantially free of obstruction whereby the vaporized fuel is discharged directly into the air intake system substantially without delay in response to the changes in the quantity of the air flowing through the air intake means, said heating means having means responsive to the fuel demand of the engine thereby to porportionately increase or decrease the amount of heat available so as to heat the liquid fuel to a temperature sufficient to vaporize substantially all of the liquid fuel prior to its being directly discharged into said intake system throughout the operating range of the engine.

4,375,800

CONTROL SYSTEM FOR INTERNAL COMBUSTION ENGINES, PROVIDED WITH AN EXHAUST GAS RECIRCULATION CONTROL HAVING A FAIL SAFE FUNCTION

Kazuo Otsuka, Higashikurume; Shin Narasaka, Yono, and Shumpei Hasegawa, Niiza, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 31, 1981, Ser. No. 298,004
Claims priority, application Japan, Sep. 2, 1980, 55-122098
Int. Cl.³ F02M *25/06*
U.S. Cl. 123—571 **7 Claims**



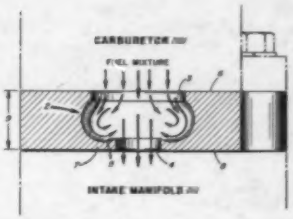
1. A control system for controlling an internal combustion engine having an intake system and an exhaust system, said control system comprising: an exhaust gas recirculation passageway communicating said intake system of said engine with said exhaust system of same; an exhaust gas recirculation control valve having negative pressure-actuatable means and arranged across said exhaust gas recirculation passageway; a negative pressure passageway communicating said negative pressure-actuatable means of said exhaust gas recirculation control valve with said intake system of said engine; a solenoid valve having a solenoid and arranged to open and close said negative pressure passageway; a power transistor connected to said solenoid of said solenoid valve for energization of same; an abnormality detecting circuit arranged to compare the level of an input applied to said power transistor with the level of an output of same and generate a first signal when said two levels are out of a predetermined relationship; a timer arranged to generate a second signal when said first signal is continuously generated by said abnormality detecting circuit for a predetermined period of time; and emergency means actuatable by said second signal generated by said timer.

4,375,801

CHARGE MIXING CARBURETOR PLATE

Donald E. Eckman, P.O. Box 10582, Erie, Pa. 16514

Filed Oct. 1, 1981, Ser. No. 307,521
Int. Cl.³ F02M *29/00*
U.S. Cl. 123—590 **9 Claims**



1. A swirl chamber between a carburetor barrel and a combustion chamber in an internal combustion engine, said swirl chamber having a substantially cardioid shape in cross section and being substantially symmetrical about its axis, said swirl chamber comprising:

an entrance throat at the top of said swirl chamber nearest to the carburetor;

an exhaust throat at the bottom of said swirl chamber nearest to the combustion chamber, said exhaust throat having a smaller underlying perimeter than said entrance throat and being disposed directly beneath said entrance throat, and being in direct fluid communication with said entrance throat;

a lip at the bottom of said swirl chamber extending radially outwardly from the perimeter of said exhaust throat formed to direct vapor flow upwards toward said entrance throat; and

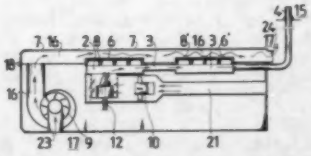
an annular trough extending radially outwardly from the lip.

4,375,802

STOVE

Jorma Wallasvaara, Kurjenmäentie 3, 20700 Turku 70, Finland

Filed Dec. 12, 1980, Ser. No. 215,863
Claims priority, application Finland, Dec. 14, 1979, 793916
Int. Cl.³ A21B *1/00*
U.S. Cl. 126—21 A **5 Claims**



4. A stove comprising:

a combustion chamber;

a burner disposed in said combustion chamber;

substantially gas-tight transport and exit ducts for combustion gases;

a heating unit including at least one hearth plate, said heating unit adjoining on and in heat exchange relationship with

said combustion chamber and said transport duct for said combustion gases;

substantially gas-tight warm air duct means including an inlet thereto and an outlet therefrom and a blower, said warm air duct means conducting air into said heating unit past said hearth plate; and

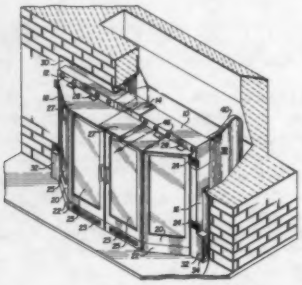
a hearth plate lid including a jacket surface positionable over said hearth plate and confining said warm air inlet thereto from the surroundings and said outlet therefrom to the surroundings and said blower, said jacket confining said warm air duct means as air is conducted into said heating unit past said hearth plate for heating air.

4,375,803

VARIABLE FIREPLACE SCREEN AND INSERT

Samuel D. Love, 13510 Old Indian Head Rd., Brandywine, Md. 20613

Filed Apr. 22, 1981, Ser. No. 256,531
Int. Cl.³ F24B *7/00*
U.S. Cl. 126—121 **5 Claims**



1. A fireplace screen and insert, comprising:

first and second hollow members, each having a horizontally extending section and a vertically extending section;

a sleeve member telescopically disposed between said horizontal sections of said first and second hollow member;

a third hollow member telescopically engaged with said vertically extending section of said first hollow member;

a fourth hollow member telescopically engaged with said vertically extending section of said second hollow member, said first, second, third and fourth hollow members and said sleeve member defining a frame;

a plurality of openably hingedly connected door sections, each door section comprising an upper section and a lower section disposed at a variable height with respect to said upper section; one of said door sections being horizontally variably hinged to a vertical section of said frame, another of said door sections being hinged to the other vertical section of said frame;

first and second overlapping plates, hingedly connected to the horizontal portion of said frame, and overlying the top edges of said door sections; and

a flange extending from the periphery of said frame.

4,375,804

MULTIPLE POSITION LEG ASSEMBLY FOR A HEAT EXCHANGE UNIT

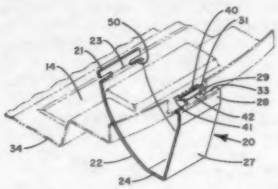
Joseph A. Ciarlei, Brewerton; William B. Jennings, Clay, and Curtis L. Tobin, Chittenango, all of N.Y., assignors to Carrier Corporation, Syracuse, N.Y.

Filed Jan. 17, 1980, Ser. No. 113,004
Int. Cl.³ F23J *11/00;* **A47B** *3/00*
U.S. Cl. 126—306 **9 Claims**

1. A support assembly for use with a heat exchange unit, said assembly having a shipping position and a support position which comprises:

a support surface defining a pivot slot having an insertion portion and a necked portion and a fastening slot having a sliding portion and a reduced portion, said pivot slot being spaced a predetermined distance from the fastening slot, said support surface further defining an area recessed from the bottom of the heat exchange unit and the fastening slot being defined within that portion of the support surface defining the top of the recessed area; and

a leg having pivot means formed as a portion thereof to coact with the pivot slot for securing the pivot end of the



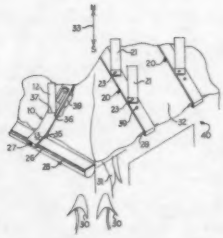
leg, a mating surface for supporting the leg when it is in the support position, a contact surface for supporting the support surface adjacent the pivot means, a radius portion connected to the mating portion and fastening means connected to the radius portion and adapted to coact with the fastening slot to secure the leg in the support position with the mating surface projecting to support the unit and said fastening means and radius portion being sized to slide through the fastening slot to place the leg in the shipping position with the mating surface being located below the fastening slot within the recessed area defined by the support surface whereby the leg does not extend below the unit when it is in the shipping position.

4,375,805

SOLAR ROOF, EAVES AND GUTTER DEVICE

Richard D. Weber, 1516 Snelling Ave., North, St. Paul, Minn. 55108

Filed Feb. 4, 1981, Ser. No. 231,298
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—417 **10 Claims**



1. A solar radiation collecting and heat conducting device for placement onto the lower roof areas of a building, said device for aiding the prevention of damage to the lower roof areas due to snow and ice buildup thereon, said device comprising a base strip portion of a energy absorbant material, said base portion for securing said device to the lower roof areas, said base portion having at least one cut line therein, said cut line defining a solar tab collector for receiving solar radiation and energy transmission with said base portion, said solar tab being so oriented to allow its faces to be positioned in a different plane than the upper face of said base portion, whereby the placement of said base portion onto the lower roof allows the

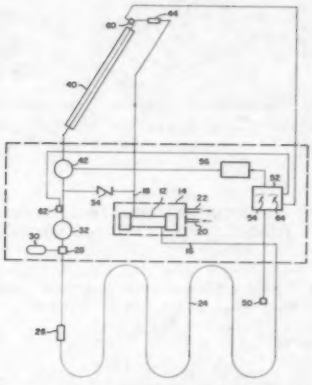
user to orient said solar tab to allow optimal collecting of oncoming sunlight.

4,375,806

HEATING SYSTEM

Paul J. Nishman, Seattle, Wash., assignor to Spencer Products Company, Seattle, Wash.

Filed Sep. 15, 1980, Ser. No. 187,314
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—436 **16 Claims**



1. In a solar and geothermal heating system having heat exchanger means for allowing heat transfer from a distribution fluid flowing through said heat exchanger means to a refrigeration fluid, a ground conduit imbedded in soil having its ends connected between the inlet and outlet of said heat exchanger, first pump means for selectively causing said distribution fluid to flow through said ground conduit, solar panel means for absorbing solar heat in a fluid flowing through a plurality of fluid passages, and solar conduit means for connecting the fluid passages of said solar panel means in series with said heat exchanger and ground conduit, the improvement comprising means for regulating the flow of said distribution fluid through said solar panel, including temperature-sensing means for measuring the temperature of soil adjacent said ground conduit and for providing an indication of said temperature measurement, and control means for allowing said distribution fluid to flow through said solar panel when the temperature indication from said temperature-sensing means is below a predetermined value and for causing said distribution fluid to bypass said solar panel when the temperature indication from said temperature-sensing means is above a predetermined value, said predetermined value corresponding to the temperature at which significant drying of said soil occurs, whereby heat from said solar panel is stored in said soil without significantly reducing the thermal mass and thermal conductivity of said soil by removing moisture therefrom.

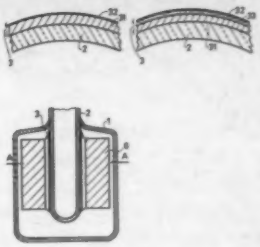
4,375,807

SOLAR CELL AND METHOD FOR THE MANUFACTURE THEREOF

Alain Friederich; Mieczylaw Hildebrandt; Daniel Kaplan, and Patrick Herbet, all of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Mar. 17, 1980, Ser. No. 130,714
Claims priority, application France, Mar. 16, 1979, 79 06744; Aug. 21, 1979, 79 21087
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—443 **12 Claims**

1. A solar cell having a first envelope and a second sealed envelope placed around said first envelope in such a way that a space is created between two envelopes and a solar radiation-absorbing means having a coating deposited on one of said faces of said envelope wherein said coating comprises a first layer constituted by a glass-metal compound consisting of fine metal powder mixed with glass powder which is deposited at



least on the face of said first envelope supporting said coating; and

a second layer consisting only of a metal oxide which absorbs solar energy.

4,375,808

SOLAR HEAT ENERGY COLLECTING SYSTEMS AND METHODS OF MAKING THE SAME

Alan A. Graham, Mercerville, N.J.; Laurence F. Haemer, Newton, Pa., and Charles H. Miller, Lawrenceville, N.J., assignors to Congoleum Corporation, Kearny, N.J.

Division of Ser. No. 26,274, Apr. 2, 1979, Pat. No. 4,294,786. This application Aug. 29, 1980, Ser. No. 182,739
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—445 **5 Claims**

1. A solar heat collecting system comprising a resinous base layer having relatively unblown or unfoamed portions of relatively higher density and blown or foamed portions of relatively lower density forming upright walls extending away from the main part of said resinous base layer, and a resinous top surface layer supported by said blown or foamed upright walls of relatively lower density, said relatively unblown or unfoamed portions and said blown or foamed portions forming a unitary, integral structure, wherein said upright walls, said resinous top surface layer, and said relatively unblown or unfoamed portions form the limits of a continuous channel passing through said solar heat energy collecting system.

4,375,809

INFLATABLE HAND PILLOW

Roy A. Meals, 10376 Keswick Ave., Los Angeles, Calif. 90064

Filed Nov. 28, 1980, Ser. No. 210,905
Int. Cl.³ A61F *5/04, 13/00*
U.S. Cl. 128—90 **3 Claims**

1. An air pillow for the human upper limb, comprising:

inflatable base chamber sections extending in an angular relationship to provide cushion surfaces for the arm and forearm when flexed;

a pair of inflatable lateral chamber sections formed of transparent, flexible sheet material and affixed at the sides of said base chamber sections bridging the angle therebetween and defining therewith an angular space to receive said upper limb and positioned to support the distal por-

tion of said upper limb therebetween and in an upright position;

means for inflating and deflating said chamber sections; and

closure means including at least one strap closure affixed between said pair of lateral chamber sections.

4,375,810

JOINING ELEMENT FOR FIXATION OF BONE TISSUES

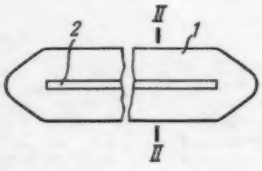
Sergei I. Belykh, 2 Krestovsky pereulok, 4, kv. 66; Anatoly B. Davydov, ulitsa Krasny Kazanets, 19, korpus 1, kv. 28; Igor L. Kovalenko, ulitsa Chapaeva, 7, kv. 30; Lidia Y. Loktionova, ulitsa Skryabina, 25/1, korpus 2, kv. 49, all of, Moscow; Anatoly D. Moschensky, Malakhovka, Bykovskoe shosse, 41, kv. 66, Moskovskaya oblast; Gely G. Pershin, Krivorozhskaya ulitsa, 9, kv. 62, Moscow; Grigory N. Pershin, ulitsa Ulbrikhta, 19/10, kv. 75, Moscow; Elena N. Padeiskaya, Leninsky prospekt, 13, kv. 24, Moscow; Lidia M. Polukhina, Alleya Zhemchugovoi, 3, korpus 1, kv.2, Moscow; Nikolai I. Ochirov, Tashkentskaya ulitsa, 34, korpus 2, kv. 195, Moscow, and Jury I. Filippov, Zarajskaya ulitsa, 41, kv. 55, Moscow, all of U.S.S.R.

Filed Jan. 4, 1980, Ser. No. 109,529

Claims priority, application U.S.S.R., Jan. 4, 1979, 2712921

Int. Cl.[3] A61F *5/04, 1/00*

U.S. Cl. 128—92 R 2 Claims



1. A joining element for fixation of bone tissue comprising: an oblong solid provided with a recess, having an insert made of a biologically compatible polymer containing a physiologically active medicine wherein the outside surface of the insert is coated with a film of a biologically compatible polymer permeable by tissue fluid.

4,375,811

SURGICAL VENTILATING APPARATUS

Howard I. Sabbota, Southfield, and Marvin H. Weintraub, West Bloomfield, both of Mich., assignors to Future Teck, Southfield, Mich.

Filed Feb. 24, 1981, Ser. No. 237,743

Int. Cl.[3] A61M *25/00*

U.S. Cl. 604—97 8 Claims

1. Surgical ventilating apparatus comprising:

a hollow, flexible, tubular body formed of a material which is not perforated during laser surgery selected from the group consisting of copper, an oxide and blends thereof, silver oxide, zinc oxide, titanium oxide, expanded silica, expanded perlite, foamed quartz, an aluminate or mixtures thereof;

said tubular body being adapted to be connected at one end to patient ventilating equipment and to have the other free end disposed within the trachea of a patient;

said tubular body including means for preventing vibration of said free end of said tubular body due to air flow therethrough.

4,375,812

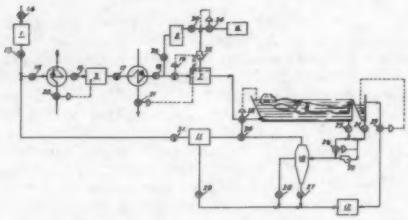
BURN TREATMENT BY PATIENT IMMERSION IN AN INERT, ISOTONIC LIQUID, WHICH HAS HAD OZONE ABSORBED THEREIN

Vesper A. Vaseen, 9840 W. 35th Ave., Wheatridge, Colo. 80033, and Dale A. Vaseen, 6911 Kendall St., Arvada, Colo. 80003

Filed Feb. 26, 1981, Ser. No. 238,217

Int. Cl.[3] A61M *15/08*

U.S. Cl. 128—207.27 7 Claims



1. A method of treating a burn wound patient by the immersion of the burn wound of a patient in an isotonic insert liquid in which the bactericidal agent, ozone, has been absorbed, comprising the steps of:

charging a closed system with an isotonic, non-miscible with water, inert liquid,

wherein said liquid has a capacity to absorb oxygen/ozone gas combinations and said liquid has a specific gravity greater than 1.10,

wherein said system contains,

means for sterilizing said inert liquid, said sterilizing means comprising a natural gravity separation device, a mechanical gravity separation device, a filter and a heat sterilizer device,

an ozonator for converting a fraction of an oxygen gas stream to ozone thereby forming an ozone/oxygen gas,

an apparatus for mixing and said ozone/oxygen gas into said inert liquid,

at least one bed/bath comprising a basin or open top vessel, in which said inert liquid is contained, adapted for the immersion of all or part of a patient's body members, except the face, therein, means for restraining a patient at a controlled submerged location in each of said at least one bed/bath and an overflow weir,

appurtenant valves and controls to cause a temperature adjusted, quantity controlled flow through said at least one bed/bath, said flow causing the physical and gravitational rejection of water, water bearing liquid and other materials with specific gravities less than that of the inert

liquid to the liquid surface where it is skimmed to said overflow weir,

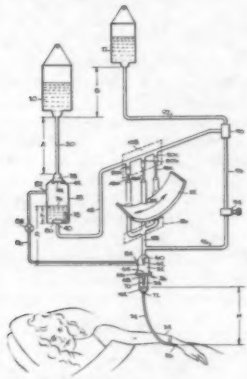
and immersing all or part of a burn patient's body members, except the face, for intermittent and extended periods of time into said inert liquid in said system for the treatment of open burn wounds.

4,375,813

MEDICAL FLUID FLOW RATE CONTROLLING DEVICE

Stephen R. Hessel, Monroe, Conn., assignor to Delmed, Inc., Canton, Mass.

Filed Feb. 10, 1981, Ser. No. 233,095
Int. Cl.³ A61M 5/14
U.S. Cl. 128—214 C 14 Claims



1. An apparatus for controlling the flow rate of an intravenously administered medical liquid to a patient from a supply of medical liquid, said apparatus comprising:

(a) a first chamber means for containing a portion of said liquid and a gas, having a liquid inlet, a liquid outlet, and a gas phase connection, said liquid inlet designed to receive liquid from the supply of medical fluid;

(b) a second chamber means for containing a portion of said liquid and a gas, having a liquid inlet, a liquid outlet, and a gas phase connection, said first chamber means having means for moving said first chamber means vertically with respect to the second chamber;

(c) gas phase pressure equalization means connected to the gas phase connections for equalizing the gas phase pressures in said first and second chambers;

(d) first liquid connecting means fluidly connecting the liquid outlet of the first chamber to the liquid inlet of the second chamber, said first liquid connecting means having at least one flow restrictor in the fluid flow path through which a known quantity of liquid flows when a given differential pressure exists across it;

(e) a third chamber means having a liquid outlet from which liquid passes to the patient and a liquid inlet for receiving liquid from the second chamber; and

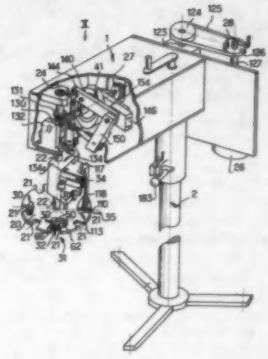
(f) second liquid connecting means fluidly connecting the liquid outlet of the second chamber to the liquid inlet of the third chamber, said second liquid connecting means having a membrane valve in the flow path which when wet passes liquid but not gas under normal operating conditions.

4,375,814

METHOD AND APPARATUS FOR AUTOMATICALLY SUPPORTING AND RESTRAINING BIRDS, AND PREFERABLY YOUNG CHICKS, SAID METHOD AND APPARATUS IN A PREFERRED EMBODIMENT BEING APPLIED FOR AUTOMATICALLY DEBEAKING SAID BIRDS

Albert J. A. Gourlandt, Les Gresillons, 78950 Gambais, France

Filed Sep. 8, 1980, Ser. No. 184,970
Claims priority, application France, Sep. 14, 1979, 79 23018
Int. Cl.³ A61B 17/00; A61D 1/00; A01K 37/00
U.S. Cl. 128—253 36 Claims



1. A method of automatically debeaking birds, comprising:

providing a plurality of spaced apart bird supports, each of said bird supports comprising means for holding said bird with the head immobilized,

moving said bird supports so that each of said bird supports follows a path successively passing through a bird loading station and a bird unloading station,

inserting a bird into said bird support in said bird loading station,

releasing said bird from said bird support in said bird unloading station,

disposing a debeaking assembly at a debeaking station along said path of said bird supports downstream with respect to said loading station but upstream with respect to said unloading station, said debeaking assembly comprising a debeaking element, movable between an operative position and a non-operative position, so that each support passes through said debeaking station, and

moving the debeaking assembly to its operative position upon arrival of a support at said debeaking station and thereafter returning said debeaking assembly to its non-operative position after a predetermined period of time sufficient to realize the debeaking operation.

4,375,815

RETRACTABLE LANCET ASSEMBLY

James A. Burns, Elizabeth, N.J., assignor to Becton Dickinson and Company, Paramus, N.J.

Filed Mar. 23, 1981, Ser. No. 246,522
Int. Cl.³ A61B 17/34
U.S. Cl. 128—314 9 Claims

1. A throw-away automatically retractable spring lancet assembly for piercing human skin which assembly includes means for preventing reuse, characterized by

(a) a housing having an aperture;

(b) a plurality of circumferentially spaced elongated openings on said housing;

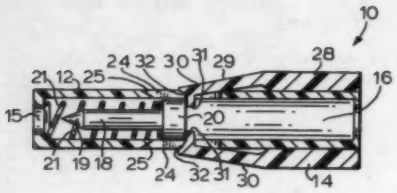
(c) a lancet mounted in said housing for reciprocable movement therein;

(d) a point on said lancet positioned adjacent the interior side of said housing aperture;

(e) an un-compressed spring in said housing extending between said housing aperture and said lancet;

(f) a sleeve slidable on said housing;

(g) a plurality of elongated flexible arms on said sleeve with feet on the arms extending through said plurality of elongated openings and engaging said lancet;



(h) cooperating means in said openings and on said feet for simultaneously automatically, upon movement of said sleeve over said housing, compressing said spring, moving said lancet point through said housing opening and retracting said lancet point back into said housing; and

(i) said cooperating means including means for jamming said spring for preventing further movement of said lancet point through said housing opening after the retraction thereof.

4,375,816

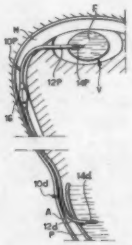
CATHETERS FOR SHUNTING SYSTEMS FOR THE TREATMENT OF HYDROCEPHALUS

Michele Labianca, Via Gorizia 182, Turin, Italy

Filed Sep. 25, 1980, Ser. No. 190,777

Int. Cl.³ A61M *25/00*

U.S. Cl. 604—8 **18 Claims**



1. A catheter for shunting systems for the treatment of hydrocephalus of the type comprising a tube of flexible synthetic polymer, a proximal end part of said tube adapted for insertion into a cerebral ventricle, a distal end part of said tube adapted to be inserted into a body cavity, and apertured portions in said end parts defining flow passages in their respective lateral walls for the flow of cerebro-spinal fluid from the ventricle into the tube and for the flow of said fluid from the said tube into said body cavity, wherein at least one of said end parts is constituted by a terminal element of titanium to prevent occlusive deposits of fibrin as a consequence of the ionization of said fluid by α particles present in said fluid, said terminal element being fixed at one end to said flexible tube and having at its other end lateral walls formed with said apertured portions and an internal flow duct communicating with said apertures and with the interior of said tube.

4,375,817

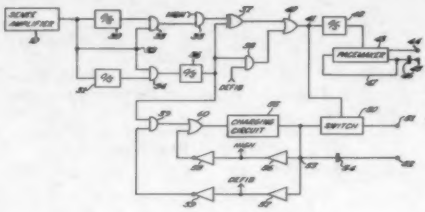
IMPLANTABLE CARDIOVERTER

William R. Engle, Blaine, Minn.; E. Neil Moore, Jr., Wallingford; Joseph F. Spear, Jr., Philadelphia, both of Pa., and Ronald H. Rockland, Parsippany, N.J., assignors to Medtronic, Inc., Minneapolis, Minn.

Continuation of Ser. No. 58,846, Jul. 19, 1979, abandoned. This application Dec. 22, 1980, Ser. No. 219,254

Int. Cl.³ A61N *1/36*

U.S. Cl. 128—419 D **14 Claims**



1. A body implantable cardioverter which comprises:

means for detecting the onset of a malignant ventricular tachyarrhythmia;

means for detecting a predetermined progression of said malignant ventricular tachyarrhythmia;

means responsive to said onset detecting means for providing a first cardioverting signal having an energy level that is high relative to a typical pacing threshold of 50 microjoules but below 45 joules that is typically necessary for defibrillation; and

means responsive to said progression detecting means for providing a second cardioverting signal having an energy level higher than the energy level of said first cardioverting signal.

4,375,818

ULTRASONIC DIAGNOSIS SYSTEM ASSEMBLED INTO ENDOSCOPE

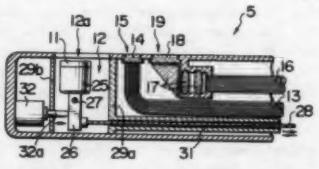
Toshitaka Suwaki, Hachioji, and Otaro Ando, Hino, both of Japan, assignors to Olympus Optical Company Ltd., Japan

Filed Feb. 13, 1980, Ser. No. 121,031

Claims priority, application Japan, Mar. 12, 1979, 54-28488; Mar. 16, 1979, 54-31323; Mar. 16, 1979, 54-31324; Mar. 27, 1979, 54-35019; May 9, 1979, 54-56464; May 9, 1979, 54-56465; May 28, 1979, 54-64920; Jul. 19, 1979, 54-90904

Int. Cl.³ A61B *10/00*

U.S. Cl. 128—660 **42 Claims**



1. An ultrasonic diagnosis system located in an endoscope, said endoscope having a distal portion which is adapted to be inserted into a coeliac cavity and a proximate operating portion adapted to be located externally of said coeliac cavity, said system comprising:

a housing formed in the distal end of said portion of said endoscope, said housing having an opening therein;

an observation window and an illumination window of said endoscope located in the vicinity of said opening;

an ultrasonic wave transmitting and receiving transducer rockably disposed in said housing for transmitting and receiving ultrasonic waves through said opening;

drive means for causing a rocking motion of said ultrasonic transducer for the purpose of scanning internal tissues of a physical body;

scan angle transducer means disposed entirely in said distal portion of said endoscope for detecting the scan angle of said ultrasonic transducer and for generating an output responsive to said scan angle; and

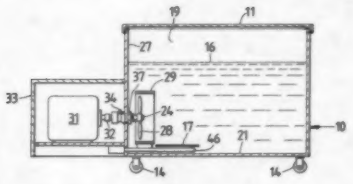
an imaging apparatus for reconstructing a B-mode sector scan image of said internal tissues in response to an output transmitted by and an echo received by said ultrasonic transducer as well as said output of said scan angle transducer.

4,375,819

APPARATUS FOR CLEANING MACHINERY PARTS AND THE LIKE

Victor F. Kyatt, Birmingham, Ala., assignor to Hurri-Kleen Corporation, Birmingham, Ala.

Filed Apr. 17, 1981, Ser. No. 255,289
Int. Cl.³ B08B *3/10*
U.S. Cl. 134—105 **3 Claims**



1. Apparatus for cleaning machinery parts and the like comprising:

(a) a closed chamber having a cover therefor and adapted to receive a cleaning solution and the machinery parts to be cleaned,

(b) a propeller shaft extending through and mounted for rotation within an opening in one side wall of said chamber in offset relation to the center of said one side wall with said shaft being below the level of said cleaning solution in said chamber,

(c) a propeller mounted on said shaft within said chamber for circulating said cleaning solution in a generally horizontal plane relative to said machinery parts to be cleaned,

(d) a sleeve-like member having one end thereof extending inwardly through said opening and operatively connected to said one sidewall and with said sleeve-like member receiving said shaft,

(e) an outwardly extending radial shoulder carried by said sleeve-like member adjacent the outer surface of said one sidewall,

(f) an annular sealing member interposed between said shoulder and said adjacent outer surface forming a fluid tight seal therebetween,

(g) an enlarged diameter axially extending recess provided in the outer end of said sleeve-like member,

(h) a packing gland carried by said recess and surrounding the outer surface of said shaft,

(i) a gland follower carried by the outer end of said recess,

(j) a retainer member threadedly connected to the outer end of said sleeve-like member and having an opening therethrough for receiving said shaft, with rotation of said retainer member in a direction to move it toward said gland follower being in the direction of rotation of said shaft to thus maintain a fluid tight seal therebetween, and

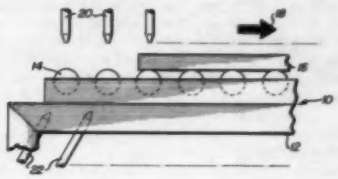
(k) heating means mounted within said chamber and immersed in said cleaning solution subjacent said propeller for heating said cleaning solution.

4,375,820

ROLLER FOR USE IN A CONVEYOR-ROLLER STRUCTURE

Joseph E. Vinarcsik, Flossmoor, and John A. Jachim, Chicago, both of Ill., assignors to Hi-Hard Rolls, Inc., Harvey, Ill.

Filed Oct. 4, 1976, Ser. No. 729,134
Int. Cl.³ B08B *3/02*
U.S. Cl. 134—122 R **3 Claims**



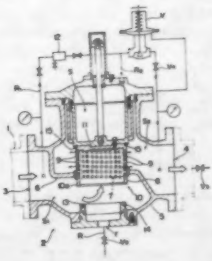
1. A roller for use with a conveyor including a plurality of rollers rotating in a predetermined feeding direction and upon which hot metal sheet material is transported substantially tangentially and substantially in a generally horizontal direction with coolant applied to the sheet material and the rollers; said roller having a cylindrical surface with oppositely extending alternating helical lands and grooves formed in said surface and leading outwardly from a generally central portion and diverging in the predetermined feeding direction of rotation of the roller for tracking the material to be transported to keep it centered upon the roller as it passes thereover, said grooves defining therebetween the helical lands extending between outer edges of adjacent grooves with a surface extent many times greater than the width and depth of the grooves as the major outer material contacting surfaces of the roller for centering the material and with the grooves draining off coolant for maintaining an even film of coolant over the lands of said roller while preventing hydroplaning of the material.

4,375,821

CONTROL VALVE

Teruaki Nanao, Yahata, Japan, assignor to Kubota, Ltd., Osaka, Japan

Filed Jan. 15, 1981, Ser. No. 225,439
Claims priority, application Japan, Jan. 25, 1980, 55-7952
Int. Cl.³ F16K *1/54*; B08B *3/04*; F16K *3/26*
U.S. Cl. 137—239 **4 Claims**



1. A control valve comprising:

a valve housing defining an interior space;

a partition defining an opening and dividing said interior

space of said valve housing into an upstream space and a downstream space;

a valve closure member slidably mounted in said opening and including a closed end reciprocable within said downstream space between an uppermost position and said partition, and a peripheral wall integral with said closed end defining a plurality of pores, and an open end opposite said closed end being reciprocable only within said upstream space between said partition and a lowermost position so as to control fluid flow through said valve according to the number of said pores positioned in said downstream space;

an inlet defined in said housing in fluid communication with said upstream space;

an outlet defined in said housing in fluid communication with said downstream space, said upstream and downstream spaces being in normal fluid communication by virtue of said opening, the liquid normally flowing in a direction from the inlet through said open end thereby passing through said pores from the interior of said closure member to the exterior thereof; and

a discharge bore formed in the valve housing in fluid communication with said upstream space and being tightly surrounded by the open end of said closure member when in said lowermost position so as to close said partition opening with said closed end thereby preventing fluid communication between said upstream and downstream spaces and reversing fluid flow through said closure member by effecting fluid flow in a direction from said inlet through said pores from the exterior of said closure member to the interior thereof.

4,375,822
DEVICE FOR DETACHABLE COUPLING A BRANCHLINE TO A PRESSURE LINE

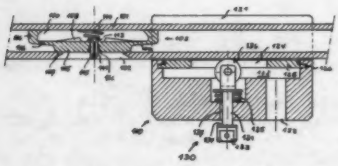
Bruno Kägi, Meilen; Georg Hirmann, Zurich, and Rolf Luginbühl, Kusnacht, all of Switzerland, assignors to Bachofen AG, Uster, Switzerland

Division of Ser. No. 68,879, Aug. 22, 1979, Pat. No. 4,296,775. This application Sep. 2, 1981, Ser. No. 298,736

Claims priority, application Switzerland, Nov. 27, 1978, 12139/78; Apr. 17, 1979, 3595/79; Jul. 20, 1979, 6788/79

Int. Cl.³ F16L *29/00, 37/28*

U.S. Cl. 137—322 **2 Claims**



1. A device for detachably coupling the orifice of a branchline to a conduit carrying a pressure medium having a plurality of discharge valves disposed spaced apart from each other along said conduit, each of said valves having a discharge opening, and a closing element for each of said openings, a coupling device having said orifice disposed therein, said coupling device being longitudinally displaceable along said conduit and connectable with the conduit by opening one of the discharge valves, said coupling device being guided on said conduit and having sealing and coupling means becoming effective automatically in the coupling position with the discharge valve being in alignment with the orifice, and actuating means effective to open by contact a respective one of said discharge valves in the coupling position of the coupling device, wherein each discharge valve has a discharge opening with a valve seat for said valve closing element, said closing element at least partially being made of an elastic material, said closing element having an inner surface disposable to the pressure in said conduit to establish sealing of the discharge opening in its closing position, and said actuating means being capable of taking operative connection with said valve closing element in said coupling position so as to transfer the closing element in its open discharge position, and a pre-control valve forming a bypass to said closing element, a spring biasing said pre-control valve, said pre-control valve being adapted to be actuated by said actuating means on said coupling element.

4,375,823
WATER DISTRIBUTOR

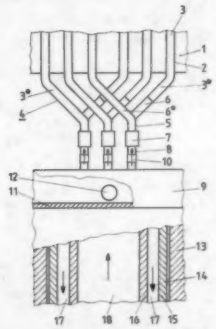
Willibald Zerlik, Birr, Switzerland, assignor to BBC Brown, Boveri & Company, Limited, Baden, Switzerland

Filed Mar. 10, 1981, Ser. No. 242,273

Claims priority, application European Pat. Off., Mar. 10, 1980, 80200226

Int. Cl.³ F16K *49/00;* **F16L** *53/00*

U.S. Cl. 137—340 **3 Claims**



1. A distributor for the electric and hydraulic junction between the individual conductor terminals which emerge from grooves at the coil end of the rotor of an electrical machine and the pipe conduit which serves as the hydraulic inlet and/or outlet, each of said conductor terminals extending along one of two radially spaced cylindrical surfaces, said distributor comprising:

a connecting stud having a first bore therein;

a first shank connected to said stud at one end thereof and having a second bore therethrough, said second bore being in alignment with said first bore at said one end, said first shank being curved in one direction and having another end positioned on one of said cylindrical surfaces and connected to one of said conductor terminals; and

a second shank connected to said stud at one end thereof and having a third bore therethrough, said second shank and third bore forming an acute angle with said first shank adjacent said one end thereof, said second shank being curved in a direction opposite said one direction and having another end positioned on the other of said cylindrical surfaces and connected to another of said conductor terminals.

4,375,824
VALVE ASSEMBLY WITH SILENCER

Horst von Borries, Krefeld, and Hans-Gerd Rittel, Wendlingen, both of Fed. Rep. of Germany, assignors to Feldmühle Aktiengesellschaft, Düsseldorf, Fed. Rep. of Germany

Filed Jun. 4, 1980, Ser. No. 156,329

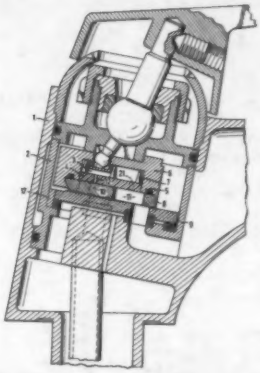
Claims priority, application Fed. Rep. of Germany, Jun. 7, 1979, 2923074

Int. Cl.³ F16K *11/06, 47/04*

U.S. Cl. 137—614.17 **15 Claims**

1. A valve assembly with a silencer installation for controlling fluid flow therethrough comprising a pair of cooperating

valve plates maintained in sliding contact with each other and movable relative to each other to control fluid flow through said valve assembly, inlet aperture means an outlet aperture means defined to extend through said valve plates, said valve plates being operable to effect alignment and nonalignment of said inlet and outlet aperture means in respective ones of said plates to control fluid flow through said valve assembly, silencer means for reducing noise in the operation of said valve assembly, said silencer means comprising a flow impeding member movable between a first position in abutting contact with one of said plates and a second position spaced away from



said one plate, said flow impeding member being configured to overlie at least said inlet aperture means to substantially impede fluid flow at least through said inlet aperture means when in said first position and to substantially decrease the impedance to fluid flow through said inlet aperture means when in said second position, and spring means applying a resilient force urging said flow impeding member against said one plate into said first position to impede said flow, said spring means being constructed to allow said flow impeding member to be urged away from said one plate toward said second position by fluid pressure through said inlet aperture means overcoming the resilient force of said spring means.

4,375,825

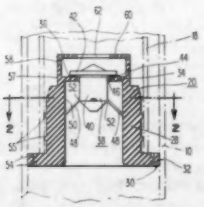
INTEGRAL VALVE APPARATUS

Donald J. Greenspan, 235 Pavilion Ave., Riverside, N.J. 08075

Division of Ser. No. 909,474, May 25, 1978, Pat. No. 4,209,485, which is a continuation of Ser. No. 793,284, May 3, 1977, abandoned. This application Dec. 17, 1979, Ser. No. 104,014

Int. Cl.³ F16K *15/14*

U.S. Cl. 137—852 **10 Claims**



1. A valve apparatus comprising:

valve seating means including a valve opening having one side and another side;

valve means adapted to seat on said valve seating member to close said opening on said one side thereof;

connective means extending from said valve means to said valve seating means on said other side thereof;

said valve seating means, said valve means and said connective means comprising an integrally molded elastomeric material, said elastomeric material of said connective means being substantially stretched and maintained under tension such that said connective means bias said valve means against said valve seating member; and

said valve means adapted to be pushed through said opening so as to relieve the tension of said connective means and move away from said valve seating means during opening while substantially stretching and placing further tension on said connectiye means.

4,375,826

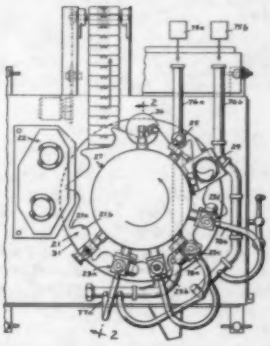
CONTAINER FILLING MACHINE

Roger H. Stohlquist, and Jonathan G. Brown, both of Rockford, Ill., assignors to Anderson Bros. Mfg. Co., Rockford, Ill.

Filed Apr. 6, 1981, Ser. No. 251,250

Int. Cl.³ B65B *3/04*

U.S. Cl. 141—137 **19 Claims**



1. A filling machine having a stationary support structure, conveyor means for advancing containers along a generally horizontal path with adjacent container centers spaced apart a preselected conveyor pitch distance, at least one valved dispenser assembly having product inlet means and product outlet means for dispensing product into the containers as they are advanced by the conveyor means, the valved dispenser assembly including an elongated nozzle member having a longitudinal nozzle axis and said product outlet means at its lower end, crank means mounted on the stationary support for rotation about a generally horizontal crank axis and having an eccentric connected to the nozzle member to move the nozzle member in a generally upright closed loop course having horizontal and vertical components of movement, means for driving the crank means in timed relation with the conveyor means and such that the horizontal component of movement of the nozzle member is in the direction of movement of the conveyor means during the lower half of the closed loop course and in the opposite direction during the upper half of the closed loop course, dispenser control means mounted on the stationary support structure for angular oscillation about a generally horizontal swing axis above said crank axis, means connecting the nozzle member and the dispenser control means for relative sliding movement in a direction paralleling the nozzle axis to cause the nozzle member to oscillate angularly about the swing axis and reciprocate relative to the dispenser control means as the nozzle member is moved in said closed loop course, valve means on the nozzle member movable between a closed position blocking flow from the product inlet to the product outlet and an open position for passing product from the product inlet to the product outlet, and valve actuator means for moving the valve means between its open and closed positions in response

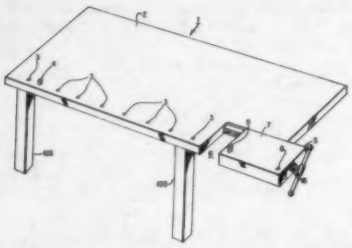
to relative reciprocatory movement between the nozzle member and the dispenser control means, said last mentioned means being operative to move the valve means to its open position as the nozzle member moves through at least a portion of the lower half of said closed loop course of the nozzle member and to move the valve means to its closed position during the remainder of the closed loop course.

4,375,827

WORKBENCH TABLE TOP CLAMPING DEVICE

Ranko Ignjatic, 68 Arnold Dr., Nepean, Ontario, Canada K2H 6W3

Filed Dec. 3, 1980, Ser. No. 212,571
Int. Cl.[3] B25H *1/00*
U.S. Cl. 144—286 R 13 Claims



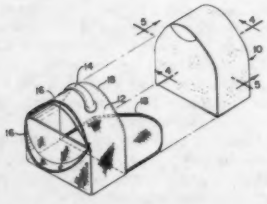
1. An improved workbench table top cut away at a corner to provide a rectangular rabbet, an extension arm extending across the corner below the top surface of the table, a U-shaped clamping member having an elongated arm adjoining an outer and an inner leg disposed in a plane parallel to the table top around the extension arm, said extension arm including a hole spaced from its end, a brace bar of similar but slightly smaller dimensional cross-section as said hole joining said legs through said hole, means to adjust the clamping member relative to the extension arm along an axis of adjustment, the elongated arm having narrow extensions which are fitted into cooperatively shaped slots in abutting portions of said legs, and pins extending orthogonally through said legs and arm extensions.

4,375,828

PORTABLE INSULATED CONTAINER

Bradley O. Biddison, 4834 194th SE., Issaquah, Wash. 98022

Filed Oct. 14, 1980, Ser. No. 196,526
Int. Cl.[3] A45C *11/00*
U.S. Cl. 150—2.1 11 Claims



1. A thermally insulated, portable container assembly comprising a flexible outer carrying bag and an inner container adapted to be positioned within said outer bag;

said inner container including walls being formed of flexible insulating material to provide an insulated chamber;

a flexible flap member integrally forming a portion of one of the chamber walls, said flap member being displaceable to provide access to the interior of the inner container;

sealing means for sealing said flap member to the adjacent edges of said inner container; and

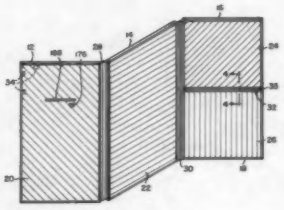
said carrying bag including a displaceable flap portion adjacent to the displaceable flexible flap member of said inner container.

4,375,829

FRAMING APPARATUS, METHOD AND FRAMING MEMBER

George G. Dorr, Fairport, and James R. Miller, Hamlin, both of N.Y., assignors to Giltspur Exhibits/Rochester, Rochester, N.Y.

Filed Jun. 12, 1981, Ser. No. 273,075
Int. Cl.[3] A47G *5/00*
U.S. Cl. 160—135 9 Claims



1. A framing system comprising:

(a) two frames, each frame comprising four elongated framing members;

(b) each of said framing members being of identical, substantially H-shaped cross-section and having mitered ends, and said framing members being connected together at their mitered ends to form mitered frame corners, the cross-sectional shape of said framing members comprising two substantially parallel, spaced-apart legs joined by a transverse web substantially perpendicular to said legs, thereby forming inner and outer U-shaped channels on opposite sides of said web, said framing members being connected such that said inner channel opens inwardly into said frame and said outer channel opens outwardly away from said frame;

(c) said frames being located adjacent to each other with a first framing member of a first frame adjacent to a second framing member of a second frame, with the outer channel of said first framing member facing the outer channel of said second framing member;

(d) means for assembling said first and second frames together comprising a joiner strip having a first portion thereof positioned in said outer channel of said first framing member and a second portion thereof positioned in said outer channel of said second framing member;

(e) said first and second frames being located horizontally side by side, and

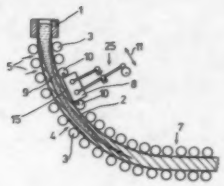
(f) releasable connecting means connected to each of said first and second frames for releasably connecting said joiner strip thereto, and wherein said releasable connecting means comprises a clip for receiving and holding a bottom end of said joiner strip and a hinged connector for holding a top end of said joiner strip.

4,375,830

METHOD AND APPARATUS FOR SUPPORTING A STEEL STRAND PRODUCED DURING A CONTINUOUS STRAND CASTING METHOD

Adalbert Röhrig, Wädenswil, Switzerland, assignor to Concast AG, Zurich, Switzerland

Filed Mar. 2, 1981, Ser. No. 239,443
Claims priority, application Switzerland, Mar. 20, 1980, 2191/80
Int. Cl.³ B22D 11/12
U.S. Cl. 164—468 3 Claims



1. A method of supporting a continuous cast strand, specially a steel strand, produced during a continuous casting operation, wherein the liquid core of the cast strand is electromagnetically stirred, comprising the steps of:

providing guide rolls and an electromagnetic stirrer cooperatively arranged between said guide rolls; and

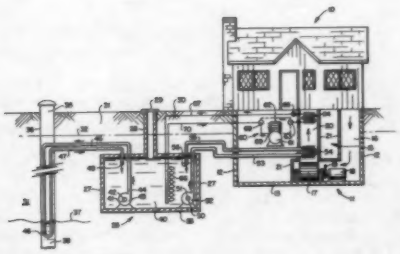
during the continuous casting operation oscillating the guide rolls together with the electromagnetic stirrer arranged therebetween in the lengthwise direction of the cast strand.

4,375,831

GEOTHERMAL STORAGE HEATING AND COOLING SYSTEM

James E. Downing, Jr., 2221 Middlehurst Dr., Columbus, Ohio 43219

Filed Jun. 30, 1980, Ser. No. 164,089
Int. Cl.³ F25B 29/00, 27/02
U.S. Cl. 165—48 R 6 Claims



1. A geothermal system for heating and cooling the environment of indoor living space, comprising:

(a) a massive thermal storage means;

(b) a geothermal storage capacity means connected to the massive thermal storage means in a heat transfer relationship by a first subsystem comprising a closed circuit for conducting a working fluid between the massive thermal storage means and the geothermal storage capacity means as induced by a first pumping means in the closed circuit, the geothermal storage capacity means being the earth;

(c) heat pump means operably connected to a first heat exchanger in the environment of the living space and operably connected to a second heat exchanger in the massive thermal storage means in heat exchange contact with the working fluid; and

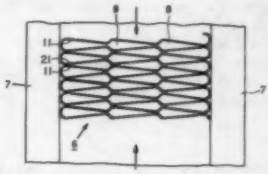
(d) a second subsystem comprising a closed circuit for conducting the working fluid between the massive thermal storage means and a third heat exchanger in the environment of the living space connected in heat exchange contact with the working fluid.

4,375,832

TUBE AND FIN RADIATOR

George A. Asselman; Adrianus P. J. Castelijns, and Adrianus J. Van Mensvoort, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 930,150, Aug. 2, 1978, abandoned, which is a continuation of Ser. No. 732,368, Oct. 14, 1976, abandoned. This application Apr. 1, 1980, Ser. No. 136,236
Claims priority, application Netherlands, Oct. 29, 1975, 7512632
Int. Cl.³ F28D 1/00
U.S. Cl. 165—152 1 Claim



1. A radiator having a plurality of parallel cooling medium pipes having fin stacks secured thereto, wherein a fin stack comprises a zigzag folded metal strip of a desired width dimension forming alternating fin and side parts, said side parts being formed by fold areas equally spaced and defining equal length fin parts therebetween, all respective successive side parts at each respective side of the stack engaging each other, at least one stack side being secured to a cooling medium pipe;

said fin parts being divided by a succession of regularly spaced bend areas into planar portions, all said bend areas extending in a direction parallel to said fold areas,

said planar portions extending, from the successive side parts defining said fin parts, in mutually parallel stepwise planes, arranged such that the first planar portions which extend from a side part at one side converge toward the engage each other at a bend area.

4,375,833

AUTOMATIC WELL TREATMENT SYSTEM

Floyd G. Meadows, Rte 2, Box 199, Mena, Ark. 71953

Filed Sep. 4, 1981, Ser. No. 299,329
Int. Cl.³ E21B 43/12
U.S. Cl. 166—64 8 Claims

6. An apparatus for intermittantly treating a producing oil well, comprising:

a continuously operated fluid pump;

discharge piping coupled to the output of said pump and providing fluid communication with the interior of the well;

an automatic treatment valve coupled to said discharge piping, wherein fluid flows into the well only when said treatment valve is open;

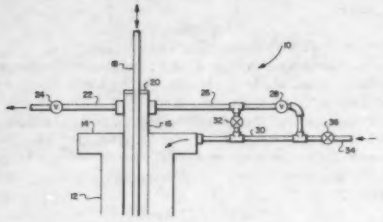
a holding tank coupled to the intake of said pump;

return piping coupled to said holding tank, and to said discharge piping between said pump and said treatment valve;

a controllable return valve coupled to said return piping, wherein fluid flows through said return piping only when said return valve is open;

a first timer having a reset input which turns said first timer on for a first predetermined period when a reset signal is received;

connecting means coupled to an output of said first timer for controlling the positions of said treatment and return valves as a function of the state of said first timer;



a second timer having a reset input which turns said second timer on for a second predetermined period when a reset signal is received; and

delay means coupled to the reset inputs of said first and second timers for providing a reset signal to said timers when said second timer turns off.

4,375,834

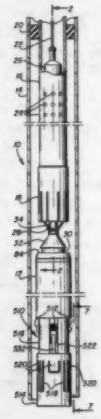
CASING PERFORATION METHOD AND APPARATUS

Donald E. Trott, Victoria, Tex., assignor to D & D Company Ltd., Victoria, Tex.

Continuation of Ser. No. 39,348, May 16, 1979, abandoned. This application Jun. 24, 1981, Ser. No. 276,945

Int. Cl.³ E21B *43/116*

U.S. Cl. 166—297 **30 Claims**



1. A differential pressure casing gun adapter for attachment to production tubing by means of an overshot comprising:

a turret adapter with a base and a neck, said base being of greater diameter than said neck;

a plurality of axially disposed springs fixed to said neck, said springs releasably engaging the overshot;

a firing mechanism;

a plurality of splines having one end attached to said firing mechanism and disposed generally parallel to said neck and in sliding engagement with said neck, the second end of said splines in contact with said springs, said splines securing said firing mechanism proximately to said neck;

a collar location means; and

connection means for releasably securing said collar location means to said firing mechanism.

4,375,835

OIL PRODUCTION SYSTEM

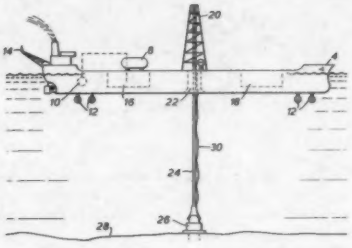
Michael Archer, Bishops Stortford, England, assignor to The British Petroleum Company Limited, London, England

Filed Dec. 19, 1980, Ser. No. 218,420

Claims priority, application United Kingdom, Dec. 21, 1979, 7944142; Feb. 19, 1980, 8005516

Int. Cl.³ E21B *43/01*

U.S. Cl. 166—339 **10 Claims**



1. An oil production system suitable for use at an offshore location comprising a floating storage vessel to receive the produced oil, the vessel having means for dynamic positioning, a riser supported from the vessel and connectable at its lower end to a subsea well head, the vessel further having means for separating the oil and its associated gas and employing the latter as fuel to power the dynamic positioning means.

10. A method of producing oil at an offshore location which method comprises employing a dynamically positioned floating storage vessel to receive the produced oil from a riser connected at its lower end to a subsea well head, the method involving separating the associated gas from the oil and using the separated gas as fuel to power the dynamic positioning means.

4,375,836

APPARATUS FOR LOOSENING SOIL

Ernst Weichel, Postfach 1180, 7326 Heiningen, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 45,061, Jun. 4, 1979, abandoned, which is a continuation of Ser. No. 849,800, Nov. 9, 1977, abandoned. This application Jan. 25, 1980, Ser. No. 115,499

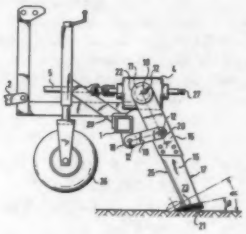
Claims priority, application Fed. Rep. of Germany, Nov. 19, 1976, 2652734

Int. Cl.³ A01B *13/00*

U.S. Cl. 172—40 **7 Claims**

1. An apparatus arranged to be pulled by a drive vehicle, such as a tractor, over the surface of a field for loosening soil in preparation for agricultural use, comprising an elongated cross-beam extending generally horizontally and transversely of the direction of travel of said apparatus, a drive shaft mounted on and extending in generally parallel relation with said cross-beam, means for driving said drive shaft, at least two upwardly extending swing levers each having a first end mounted on said drive shaft and a second end spaced outwardly and downwardly from said drive shaft, said swing levers spaced apart along the axis of rotation of said drive shaft, a loosening bit attached to each said swing lever, each said loosening bit having a first end and a second end with the first end of said loosening bit attached to the second end of said swing lever and the second end of said loosening bit extending downwardly therefrom so that said loosening bit can extend

into the soil for effecting a loosening action, wherein the improvement comprises a disc rigidly connected to each said swing lever and eccentrically mounted on said drive shaft so that said disc rotates with said drive shaft, said drive shaft spaced rearwardly and upwardly from said cross-beam, a guide rod for each said swing lever with said guide rod pivotally connected at one end to said swing lever intermediate the first and second ends thereof and means connected to said cross-beam for pivotally connecting the other end of said guide rod to said cross-beam forwardly of said swing lever, said swing levers and soil loosening bits extending downwardly in the rearward direction from said discs, a soil engaging blade attached to the second end of each said soil loosening bit and extending transversely outwardly and generally horizontally from both sides of said blade, said soil engaging blades each have a front edge facing in the direction of travel of said apparatus and an oppositely directed trailing edge, said front edge is V-shaped in horizontal plan with the apex of the V-shaped front edge aligned forwardly of said loosening bit and the sides of the V-shaped front edge sloping from the apex in the opposite direction from the direction of travel of said apparatus, the combination of the eccentric connection of said swing levers over said discs to said drive shaft, the downward and rearward orientation of said levers and loosening bits, and the pivotal connection of said swing levers via said guide rods to said cross-beam causes said soil engaging blades at the second ends of said loosening bits to describe a substantially closed non-circular arcuate path having a major axis extending generally in



the direction of travel of said apparatus and a minor axis extending tranversely of the major axis, the ratio of the length of the major axis of the closed arcuate path to the length of the minor axis of the closed arcuate path is 2:1, the angle between the major axis of the closed arcuate path and the surface of the field over which the apparatus travels is in the range of 25 degrees and 40 degrees, the major axis slopes upwardly in the direction opposite to the direction of travel of the apparatus, each said soil engaging blade has an upwardly facing surface arranged at an angle to the surface of the field over which the apparatus travels in the range of from one-half the angle between the major axis of the closed arcuate path and the surface of the field over which said apparatus travels to the angle between the major axis of the closed arcuate path and the surface of the field over which the apparatus travels, said means for driving said drive shaft comprises an input shaft located approximately midway between the ends of said cross-beam, said drive shaft comprising a gear box connected to said input shaft, a first drive section extending from said gear box outwardly toward one end of and in generally parallel relation with said cross-beam, a second drive shaft section extending from said gear box outwardly toward the other end of and in generally parallel relation with said cross-beam, at least one said disc connected to each of said first and second drive shaft sections, and said at least one disc on said first drive shaft section being spaced 45 degrees apart from the corresponding said at least one disc on said second drive shaft relative to the axis of said drive shaft.

4,375,837

SOIL CULTIVATING MACHINE WITH AXIALLY DISPLACEABLE ADJUSTING ROD

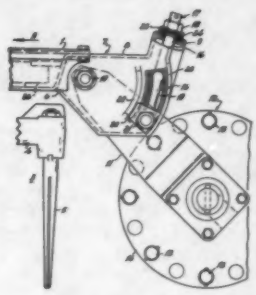
Ary van der Lely, Maasland, and Cornelis J. G. Bom, Rozenburg, both of Netherlands, assignors to C. Van der Lely N.V., Weverskade, Netherlands

Filed Jan. 2, 1980, Ser. No. 109,090

Claims priority, application Netherlands, Jan. 12, 1979, 7900240

Int. Cl.³ A01B *33/06, 49/02*

U.S. Cl. 172—68 **7 Claims**



1. A soil cultivating machine movable over the ground, comprising a frame and a portion of said frame extending transverse to the direction of travel, a plurality of cultivating members being supported on said frame portion in side-by-side relationship and in a transverse row, a ground engaging supporting roller being located to the rear of the row of cultivating members, said roller being pivoted to said frame portion with arms and an adjusting mechanism interconnecting each said arm with said frame portion to vary the working position of said cultivating members, said mechanism comprising carrier means attached to the rear of the frame portion and a spindle adjusting rod, said carrier means having an upper flange and a lower slot, the upper part of said adjusting rod extending upwardly through said flange to receive a screw fastener, the lower part of said adjusting rod being bent over and extending generally horizontally through a respective one of said roller arms and said slot, said lower rod part receiving a toothed piece that cooperates with a second toothed piece of the carrier means located adjacent said slot, fastening means clamping the toothed parts together and resilient means on the upper part of said adjusting rod that allows limited displacement of the rod substantially in the direction of its longitudinal axis relative to said carrier means.

4,375,838

ELECTRONIC BALANCE

Shozo Yano, Uji; Yasuhiro Hujinaga, Kitaenmachi; Toshio Kawara, Kyoto, and Akira Komoto, Otsu, all of Japan, assignors to Shimadzu Corporation, Kyoto, Japan

Filed Jul. 15, 1981, Ser. No. 283,534

Claims priority, application Japan, Jul. 17, 1980, 55-98632; Sep. 30, 1980, 55-137243

Int. Cl.³ G01G *23/01*

U.S. Cl. 177—50 **8 Claims**

1. An electronic balance comprising:

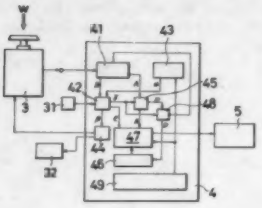
a weighing means for producing digital output signals as a measured value in response to a force induced upon a tray when an object to be weighed is placed thereon;

a first memory for storing the mass of a reference weight, said mass being known;

a discriminator for signalizing the existence and non-existence of said object on said tray;

a second memory for storing a corrected value obtained by

differentiating between a measured value of said reference weight and said mass stored in said first memory when said discriminator signalized that no object is placed on said tray;



an arithmetic unit for correcting a measured value signalized by said weighing means in accordance with said corrected value stored in said second memory when said discriminator signalizes that an object is placed on said tray; and

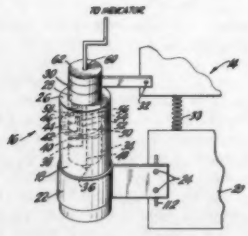
a display for permitting a visual inspection of said arithmetic results obtained by said arithmetic unit.

4,375,839

MEASURING DEVICE FOR WEIGHING VEHICLE CARGO

John J. Manning, San Jose, Calif.; Ralph M. Richart, Valley Cottage, N.Y., and Robert E. Rosin, San Jose, Calif., assignors to RMR Systems Inc., San Jose, Calif.

Filed May 5, 1981, Ser. No. 260,824
Int. Cl.³ G01G *19/18*
U.S. Cl. 177—137 3 Claims



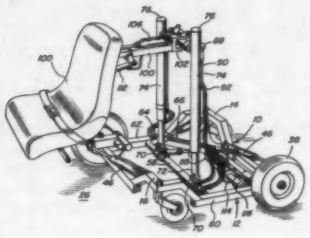
1. An apparatus for providing an indication of the weight of a load carried in a first part of a vehicle, said apparatus comprising a first member secured to said first part, a second member carried on a second part of said vehicle, said load-carrying part of the vehicle being movable relative to said second part by an amount proportional to the weight of the load carried thereby, said first member including a cylinder having an opening at its upper end and containing a quantity of an electrically conductive medium at a level below said upper end, said second member including a tubular member extending through said opening and carrying said plurality of sensors and said reference sensor on its outer periphery, said second member comprising a plurality of spaced and normally insulated sensors along the vertical axis thereof and a spaced reference sensor at the lower end thereof, at least said reference sensor being normally disposed below the surface of said conductive medium, and means connected to said plurality of sensors for providing a weight indication corresponding to which of said plurality of sensors is caused to be disposed below the surface of said conductive medium by the vertical movement of said load-carrying part of the vehicle.

4,375,840

MOBILE SUPPORT

Jack L. Campbell, P.O. Box 659, Newcastle, Wyo. 82701

Filed Sep. 23, 1981, Ser. No. 305,027
Int. Cl.³ B62D *11/004, 61/012*
U.S. Cl. 180—6.5 13 Claims



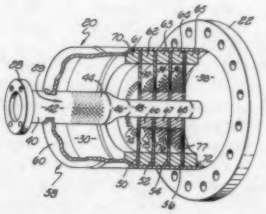
1. A mobile support including a base frame defining two pairs of opposite marginal portions with said pairs of marginal portions spaced horizontally apart in vertical planes intersecting each other and with each pair of marginal portions spaced on opposite sides of the point of intersection of said planes, a first pair of omnidirectional ground engageable support means mounted from a first pair of said marginal portions and a second pair of reversely and variably drivable ground engageable support means steerably mounted from the second pair of marginal portions for angular displacement about upstanding axes relative to the second pair of marginal portions, and steering control means operably connected between said frame and said second pair of support means for selectively variably and equally angularly displacing said second pair of support means relative to said second marginal portions.

4,375,841

FLUID FLOW APPARATUS FOR ACCOMMODATING A PRESSURE DROP

Leslie W. Vielbig, Ventura, Calif., assignor to Fluid Kinetics Corporation, Ventura, Calif.

Filed Jun. 18, 1981, Ser. No. 274,840
Int. Cl.³ F01N *1/08*
U.S. Cl. 181—272 6 Claims



1. An apparatus for receiving a high pressure fluid flow to accommodate a drop to a lower pressure fluid flow with attenuated noise, comprising:

an elongated member having one end closed and another end adapted to be connected to receive said high pressure fluid flow, said elongated member defining perforations in a section thereof centrally offset toward said other end;

a plurality of plates somewhat concentrically supported on said elongated member at spaced locations and centrally offset from said perforations toward said closed end from said perforations, said plates defining multiple orifices of increasing aggregate area in the order of said plates from said other end of said elongated member;

a cylindrical housing enclosing said section of said elongated member containing said perforations and receiving said plates to define pressure reduction spaces therebetween; and

connection means affixed to said cylindrical chamber for passing said lower pressure fluid flow.

4,375,842

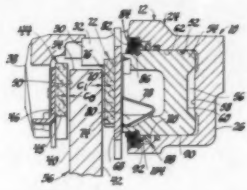
DISC BRAKE CALIPER PISTON AND HOUSING RETRACTION AND KNOCKBACK CONTROL MECHANISM

Wolfgang Melinat, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Jun. 25, 1981, Ser. No. 277,151

Int. Cl.³ F16D *55/224, 65/54*

U.S. Cl. 188—71.8 **3 Claims**



1. In a disc brake assembly having a caliper including a housing slidably mounted on a fixed mounting member, a first brake pad assembly mounted on said caliper housing and having a first friction surface positioned for engagement with one side of a disc to be braked, a hydraulically actuated piston mounted in a cylinder formed in said caliper housing, a second brake pad assembly mounted on said piston and having a second friction surface positioned for engagement with the other side of the disc to be braked, and a grip-and-slip retraction and knockback control mechanism, the improvement comprising the mechanism determining and controlling disc brake pad assembly retraction movements to establish zero drag between the brake pad assembly friction surfaces and the disc, said mechanism comprising in combination:

a caliper housing grip-and-slip retraction and knockback control mechanism providing for a predetermined limited amount of caliper housing retractive sliding movement on said fixed mounting member during brake pad assembly retraction and acting during brake actuation when said amount of predetermined limited axial caliper housing movement is exceeded in the brake actuation direction to adjust the retracted position of said caliper housing relative to said fixed mounting member;

and a piston grip-and-slip retraction and knockback control mechanism providing for a predetermined limited amount of axial retractive movement of said piston relative to said caliper housing during brake pad assembly retraction and acting during brake actuation when said amount of predetermined limited axial piston retractive movement is exceeded to adjust the retracted position of said piston relative to said caliper housing;

the predetermined limited axial retractive movement of said piston in the caliper housing upon brake release being established by the sum of the total caliper housing movement relative to the fixed mounting member at full hydraulic pressure actuation of the disc brake assembly and the total second brake pad assembly friction surface movement relative to the disc at full hydraulic pressure actuation of the disc brake assembly.

4,375,843

PISTON-CYLINDER ASSEMBLY FOR A VIBRATION DAMPER UNIT HAVING AN ESSENTIALLY TUBULAR CONTAINER

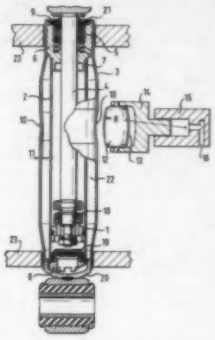
Hermann Itzinger, Dittelbrunn; Manfred Koller, Euerbach-Obbach; Erich Jäger, Schweinfurt, and Werner Christel, Hambach, all of Fed. Rep. of Germany, assignors to Fichtel & Sachs AG, Schweinfurt, Fed. Rep. of Germany

Filed Nov. 18, 1980, Ser. No. 207,981

Claims priority, application Fed. Rep. of Germany, Dec. 1, 1979, 2948391

Int. Cl.³ B21D *17/04;* **F16F** *9/32*

U.S. Cl. 188—322.19 **18 Claims**



1. A piston-cylinder unit, particularly useful for shock absorbers and telescopic struts, comprising

(a) an essentially tubular container with a first axial end region and a second axial end region;

(b) a cylinder arranged within said container, with a first axial end region facing toward said first axial end region of said container, and a second axial end region facing said second axial end region of said container;

(c) support means on said container at said first axial end region thereof for axial support of said first axial end region of said cylinder;

(d) a piston rod guide and sealing unit arranged at least in part within said second axial end region of said container and supported in the axial direction on said second axial end region of said cylinder;

(e) a deformation in said second axial end region of said container by means of which said piston rod guide and sealing unit is fixed in the axial direction relative to said container, so that said cylinder is fixed axially immovably between said support means and said piston rod guide and sealing unit;

(f) a piston rod inserted into said cylinder through said piston rod guide and sealing unit;

(g) a piston connected to said piston rod within said cylinder; and

(h) at least one circumferential indentation in said container between said support means and said deformation which is made after said deformation has been made.

4,375,844

COIN OPERATED MECHANISM WITH ANTI-THEFT LATCH

Arthur R. Facto, 17 Lormar Dr., Toronto, Ontario, Canada (M9B 4V7)

Filed Apr. 2, 1981, Ser. No. 250,291

Int. Cl.³ G07F *5/06*

U.S. Cl. 194—54 **6 Claims**

1. A coin operated vending mechanism for opening an access door to a cabinet for purposes of retrieving an object being stored therein, comprising:

a first plate having at least one slot therein to receive a coin inserted therethrough;

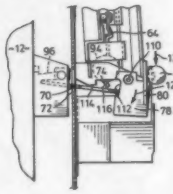
at least one coin chute in communication with said slot;

at least one pawl adopted to engage an edge of said coin when in place in said coin chute;

a latch plate spring biased into co-operating position with a latch hook, and having a camming portion thereof operable by co-action between proper coinage in said at least one coin chute and said at least one pawl when it is arranged in the proper position to engage said proper coinage, so as to release said latch plate from said latch hook;

said latch plate being mounted to said door so as to thereby permit opening thereof; whereby said at least one coin falls past the position normally occupied by said latch plate into a coin collecting receptacle;

a coin return button co-operating with said at least one coin chute to move said chute into a coin return position over a coin return chute;



and an anti-theft mechanism to prevent return of said at least one coin in said coin chute at the same time as said door is opened, or vice versa, comprising a first anti-theft plate adapted for rotation about a mounting point therefor, and engaging said latch plate so as to be in a first position, such that when said latch plate is moved out of engagement with said anti-theft plate said anti-theft plate swings by gravity to a second position;

and a counter-balance plate adapted for rotation about a mounting point therefor, and engaging said anti-theft plate so as to be in a first position when said anti-theft plate is in its respective first position, such that when said anti-theft plate assumes its respective second position said counter-balance plate is permitted to swing by gravity to its second position;

said second position of said counter-balance plate being such that it physically precludes movement of said at least one coin chute over said coin return chute.

4,375,845

TAIL SECTION FOR MULTIPLE CHAIN DRAG CONVEYOR

Al L. Chambers, St. Charles, Mo., and Carl V. Parker, West Memphis, Ark., assignors to Bunge Corporation, New York, N.Y.

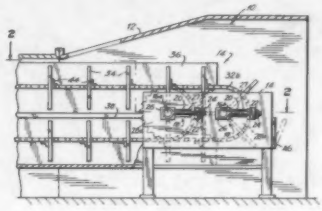
Filed Nov. 21, 1980, Ser. No. 208,880
Int. Cl.³ B65G *23/44*
U.S. Cl. 198—570 **6 Claims**

1. A tail assembly for a multiple chain drag conveyor having at least two independent conveyor chains each carrying an independent flight of paddles and capable of independent, continuous movement on an endless path comprising:

(a) a take-up frame assembly mounted within said tail assembly;

(b) a plurality of tail shaft mechanisms mounted in common within said tail assembly which each include a tail shaft having two ends carried on the take-up frame assembly, a separate one of the tail shafts being provided for each of the chains of the conveyor, each end of each tail shaft extending beyond the flight of paddles; said tail shafts being mounted noncoaxial to each other to allow individual adjustment of each shaft;

(c) offset chain engaging means mounted upon each tail shaft, each capable of carrying one chain; and,



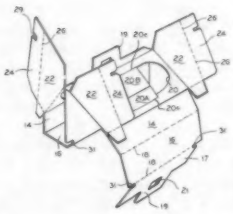
(d) adjustment means mounted on said take-up frame and connected to at least one end of each of said tail shafts for individually moving said tail shafts to separately tension and adjust each of said chains.

4,375,846

CONTAINER

James F. Nauheimer, Chicago, Ill., assignor to Container Corporation of America, Chicago, Ill.

Filed Apr. 22, 1981, Ser. No. 256,391
Int. Cl.³ B65D *75/00*
U.S. Cl. 206—195 **5 Claims**



1. A container formed from a cut and scored blank of paperboard or the like comprising:

(a) a top panel flanked to each side by sloping side, front, bottom and partition panels connected along parallel score lines;

(b) said partition panels being folded into facing relationship;

(c) end closing panels of generally trapezoidal shape foldable with respect to said side panels into closing relationship;

(d) a slot in said partition panels at the ends thereof and adjacent the bottom panels connected thereto;

(e) a flap disposed at the distal portions of said end closing panels and folded into position atop its proximate bottom panel;

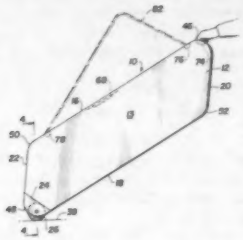
(f) said flap having a slot therein in cooperating relationship with the slot in a partition panel to hold said end closing panel in position; and

(g) said sloping side panels having an aperture therein to receive articles of commerce, said aperture being formed of major and minor flaps foldable from the plane of said sloping side panels, said minor flaps being engageable with the chimes of said articles and said major flaps being foldable to a position for stiffening said top panel.

4,375,847
PORTABLE GOLF EQUIPMENT CASE

William A. Picco, 12433 Surrey Circle Dr., Tantallon, Md. 20022

Filed Jul. 21, 1981, Ser. No. 285,480
Int. Cl.³ B65D 71/00
U.S. Cl. 206—315 R 11 Claims



1. A portable golf equipment case for carrying a knock-down golf bag, clubs and golf accessories comprising in combination:

an oblong box-like body member including a pair of broad side walls generally in the form of a parallelogram and connected by a pair of relatively narrow side walls and a pair of relatively narrow end walls, one of said broad walls having a major portion thereof forming a lid for entry into the interior of said body member;

a roller member located at one diagonal end of said case, said roller member running substantially across the width of said relatively narrow side and end walls for providing a relatively wide load bearing surface for pulling the case from the mutually opposite diagonal end;

means located at said opposite diagonal end for pulling said case;

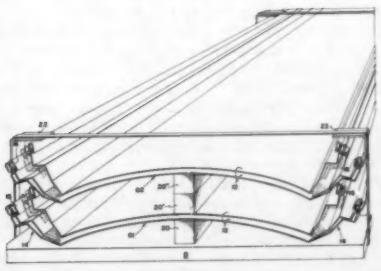
means located substantially at the mid section of one narrow side wall for lifting and carrying said case; and

means selectively located on said one side wall for attaching a carrying strap thereto.

4,375,848
STACKED PANEL PACKAGE AND METHODS FOR MAKING SAME

Harold G. Simpson, Oklahoma City, and Robert S. Wilson, Del City, both of Okla., assignors to The Wickes Corporation, San Diego, Calif.

Filed Dec. 9, 1980, Ser. No. 214,486
Int. Cl.³ B65D 85/62; B65B 35/52
U.S. Cl. 206—321 6 Claims

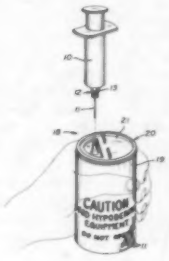


6. An assembled stack of standing seam panels, each of said panels comprising a generally rectangular normally substantially flat main portion and standing seam edge portions projecting upwardly from the two longitudinal side edges of said main portions, said stack comprising a flat support base, and elongate support member located on said base, a stack of said panels, the lowermost panel of said stack being supported along the longitudinal centerline of its main portion upon said support member with said two longitudinal side edges resting upon said support base whereby the main portion of said lowermost panel is arcuately bowed upwardly in its transverse extent, successive panels in said stack having their main portions bowed in successively increasing radii of curvature, each of said successive panels having its seam edge portions nested between the seam edge portions of the next lowermost panel in the stack, and strap means extending transversely around said support base and said stack to bind said panels, support member and support base together.

4,375,849
SYRINGE NEEDLE REMOVAL AND DISPOSAL DEVICE

Paul H. Haniff, Barrington, Ill., assignor to Sage Products, Inc., Cary, Ill.

Filed May 15, 1981, Ser. No. 264,541
Int. Cl.³ B65D 25/00; B65F 7/00, 1/02
U.S. Cl. 206—366 18 Claims



1. A needle removal and disposal device for detaching single or double-ended sampling needles which are thread engaged to a syringe body and storing detached sampling needles, said device comprising:

storage container means;

cap means associated with said storage container means, said cap means having a plate means with slot means opening therethrough, said slot means including integral wall means depending into said storage container means, entry port means and a plurality of stepped notches each having a different gap dimension for accommodating different sized needle hub portions; and

closure means pivotably associated with said plate means and being movable with respect to said slot means for controlling access thereto;

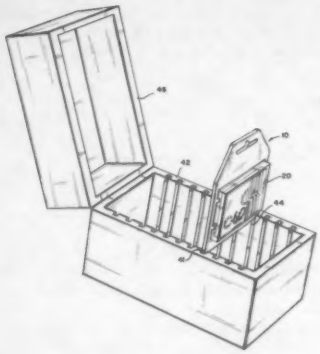
wherein said device is capable of engaging a sampling needle hub portion at a stepped notch whereby a syringe thread-engaged to a hub portion may be rotated with respect to the hub portion for detachment of a sampling needle, whereby detached needles and hub portions may be deposited through said entry port means into said storage container means, said device providing said storage container means for accumulation of sampling needles subsequent to detachment from syringes, and whereby said pivotable closure means is capable of moving to close access to said slot means and provide safe storage of sampling needles within said storage container means.

4,375,850

SYSTEM FOR DISPLAY AND STORAGE OF CASSETTES

William A. Smyth, Fullerton; Graydon S. Carlson, Orange, and Harold J. Wilde, Fullerton, all of Calif., assignors to Certron Corporation, Anaheim, Calif.

Filed Feb. 5, 1982, Ser. No. 346,223
Int. Cl.³ B65D *85/672, 73/00*
U.S. Cl. 206—387 **2 Claims**



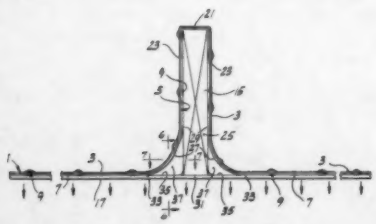
1. A system for display on a rod of a rack and storage in a case of cassette in boxes comprising a holder for at least one of said boxes, said holder being comprised of a flat sheet having a window for receiving a box, said box having a pair of holes in each end wall near a base of said box, each hole being formed by a U-shaped channel in the end wall extending past the inner surface of said base, and a pair of nibs protruding into said window from said holder at opposite sides, said opposite sides being selected to correspond to the ends of said box having said holes, whereby said nibs inserted into said holes will retain said box, said holder having a tab extending from one side, and said tab having a hole adapted to receive said rod for display on said rack, and a storage case having slots on two opposing sides for receiving said holder and holding said holder upright with the tab thereof extending upwardly for withdrawing said holder from said case.

4,375,851

SKIN PACKAGING

James P. Paulos, Brooklyn Center, Minn., assignor to Bemis Company, Inc., Minneapolis, Minn.

Division of Ser. No. 15,412, Feb. 26, 1979, abandoned. This application Oct. 17, 1980, Ser. No. 198,204
Int. Cl.³ B65D *73/00, 75/36, 75/54, 83/08*
U.S. Cl. 206—471 **10 Claims**



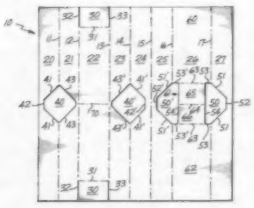
4. A package comprising a substrate of a material adapted to have air drawn therethrough and adapted for thermal bonding to one face thereof of thermoplastic material, an article on said face of the substrate, and a wrapper overlying the article and bonded to said face of the substrate, said wrapper comprising a film of thermoplastic material and a reinforcement for the film, said reinforcement comprising a plurality of strands of thermoplastic material, said strands being so related to the film, as determined by their composition, thickness and color, that when heated simultaneously with the film they become extensible along with the film but less extensible than the film, said film and said reinforcement being drawn over the article and providing a reinforced skin at least substantially covering the article and holding it on the substrate, strands overlying the article having, by reason of their lower extensibility than the film on being heated simultaneously with the film, portions flaring outwardly and downwardly from points on the article between the base and the top of the article to points on the substrate spaced outwardly from the base of the article.

4,375,852

CORNER AND EDGE PROTECTOR

Robert E. Johnston, Lake Zurich, and Kishor N. Kudalkar, Carol Stream, both of Ill., assignors to Weyerhaeuser Company, Tacoma, Wash.

Filed Sep. 8, 1981, Ser. No. 300,403
Int. Cl.³ B65D *81/04*
U.S. Cl. 206—586 **8 Claims**



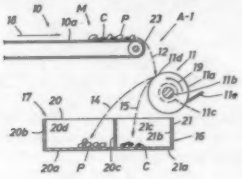
1. A blank for an edge protector comprising
a rectangular corrugated board divided by a series of substantially parallel score lines into
a first intermediate side panel,
a first interior side panel,
a bottom panel,
a second interior side panel,
a second intermediate side panel,
a first exterior side panel,
a top panel,
and a second exterior panel,
said panels being serially connected by said score lines,
an interior aperture formed in each of said intermediate and interior side panels,
each of said apertures having
first diagonal edges extending from the score line between said intermediate and interior side panels toward the edge of said intermediate side panel opposite said interior side panel, said first diagonal edges being substantially perpendicular to each other,
second diagonal edges extending from said score line between said intermediate and interior side panels to the score line between said interior side panel and said bottom panel, said second diagonal edges being substantially perpendicular to each other,
said first and second edges meeting at said score line between said intermediate and interior side panels, said first and second adjacent diagonal edges being substantially perpendicualr to each other whereby said first and second adjacent diagonal edges will be substantially aligned in the formed protector, and
exterior apertures formed in the exterior side panels, said exterior apertures being formed by third diagonal edges in said exterior side panels which will be aligned with the first diagonal edges in the formed protector and additional edges in said top panel.

4,375,853

APPARATUS FOR SEPARATING CLODS AND AGRICULTURAL PRODUCTS

Ron Feller, Ramat-Efal; David Nahir, Bat-Yam, both of Israel, and Charlie G. Coble, Bryan, Tex., assignors to Texas A & M University System, College Station, Tex.

Continuation of Ser. No. 102,998, Dec. 12, 1979, abandoned.
This application Sep. 9, 1981, Ser. No. 300,658
Int. Cl.³ B07C 5/00
U.S. Cl. 209—640 5 Claims



1. Apparatus for separating desirable agricultural product from a mixture of such desirable agricultural product and clods and the like, comprising:

first conveyor means for transporting an unsorted mixture of desirable agricultural product and clods to a first area of free fall to allow both said product and clods to freely fall, said fall occurring under the influence of gravity only and having a trajectory with horizontal component due to said first conveyor means;

first separation means positioned approximately below said conveyor means in the trajectory of said free falling unsorted mixture of agricultural product and clods to cause said product and clods to bounce off of said first separation means at different separation velocities and therefore travel different separation distances;

said first separation means includes a first generally cylindrical separation roller for rebounding said product and clods in substantially the same direction of initial travel of said unsorted mixture of product and clods by said conveyor means;

first product receiving means positioned generally adjacent to said first separation means in order to receive said desirable agricultural product;

second conveyor means positioned approximately below said first generally cylindrical roller for transporting a partially sorted mixture of desirable agricultural product and clods received from said first generally cylindrical separation roller to a second area of free fall to allow both said product and clods to freely fall, said fall occurring under the influence of gravity only and having a trajectory with horizontal component due to said second conveyor means;

second separation means positioned approximately below said second conveyor means in the trajectory of said free falling partially sorted mixture of agricultural product and clods to cause said product and clods to bounce off said second separation means at different separation velocities and therefore travel different separation distances;

said second separation means including a second generally cylindrical separation roller rebounding said partially sorted mixture of product and clods in a direction substantially opposite to said direction of travel of said partially sorted mixture of product and clods along said second conveyor means;

second product receiving means positioned generally adjacent to said second separation means in order to receive said desirable agricultural product; and

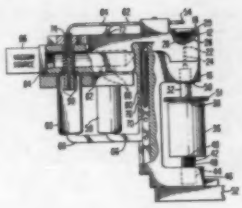
clod receiving means positioned between said second separation means and said second product receiving means to receive said clods.

4,375,854

STONE SORTING APPARATUS AND METHOD

Rudolph H. Hedel, West Windsor, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Mar. 31, 1981, Ser. No. 249,613
Int. Cl.³ B07C 5/00
U.S. Cl. 209—643 7 Claims



1. A stone sorting apparatus for viewing stones individually through a microscope comprising:

a platform having a reservoir adjacent a surface thereof for storing said stones,

a rod having one end thereof projecting upward through an opening disposed at the bottom of said reservoir, said rod adapted to slide along said opening, and having at said one end a concave indentation facing upward and shaped to support one of said stones,

means connected to the other end of said rod for sliding the one end of said rod between a first position within said reservoir, and a second position outside said reservoir, whereat said one end is positioned exactly within the field of view of an objective of said microscope such that a stone supported by said indentation is disposed precisely at the focal length of said microscope objective,

a first and a second suction nozzle disposed above said platform surface and in pathway communication with, respectively, an accept container and a reject container, each of said nozzles adapted to transport therethrough a stone, held adjacent thereto, to the respective container upon application of a vacuum thereto,

a source of vacuum connected to said accept container and said reject container, and

first and second means, supported by said platform and connected, respectively, to said first and said second nozzles, for moving, respectively, said first and said second nozzles between a pick-up position located adjacent a stone supported by said indentation when the one end of said rod is disposed at said second position, and a retracted position located away from said pick-up position.

4,375,855

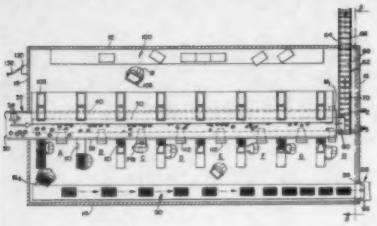
TRANSPORTABLE PRODUCE PROCESSING HOUSE

Ueal D. Floyd, P.O. Box 1608, Palatka, Fla. 32077

Filed Nov. 25, 1980, Ser. No. 210,347
Int. Cl.³ B07C 7/04
U.S. Cl. 209—705 3 Claims

1. A produce processing house including side, end, bottom and top walls, wheels supporting said house, a draw bar connected to one end of the house to permit towing said house from location to location, a main produce transporting conveyor extending from a produce receiving station exterior of one end wall of said house, through an opening in said one end wall and then extending substantially the length of the house, said main produce transporting conveyor further located substantially centrally between the side walls of the house, a culls transporting conveyor positioned below the main produce transporting conveyor having a length substantially equal to the length of said house, each said main produce transporting conveyor and said culls transporting conveyor having means for moving produce toward the other end of said house, a

take-away conveyor positioned along one side wall of said house and extending from said one end wall of said house, through a discharge opening in the other end wall of said house, a pair of elevating conveyor means, one of said pair of elevating conveyor means communicating with the culls transporting conveyor and the other of said pair of elevating con-



veyor means communicating with the take-away conveyor, a plurality of spaced produce processing stations extending the length of said house between the main produce transporting conveyor and the take-away conveyor, and a culls chute at each said processing station providing communication between each processing station and the said culls transporting conveyor.

4,375,856

APPARATUS FOR INSERTING AND EXTRACTING FLEXIBLE FLAT OBJECTS INTO AND OUT FROM A MAGAZINE

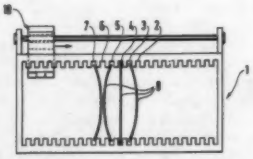
Alain Chappot, Corbeil Essonnes, France, assignor to Societe Anonyme dite: Compagnie Generale d'Automatisme, Paris, France

Filed Feb. 23, 1981, Ser. No. 236,924

Claims priority, application France, Feb. 27, 1980, 80 04308

Int. Cl.³ B07C *5/00*

U.S. Cl. 209—706 **3 Claims**



1. Apparatus for inserting and removing flexible flat objects respectively into and from a storage magazine having at least one open side and a plurality of spaced parallel guide paths extending transversely with respect to the open side for engaging opposite edges of such flexible flat objects, the apparatus including a guide unit positioned adjacent to the open side of the magazine and having an insertion/extraction guide path selectively alignable with any guide path in the magazine and an ejection device positioned in transverse alignment with the guide unit on the side of the magazine opposite to the open side and having a contact surface movable in a plane parallel to the guide paths of the magazine for pushing a flat flexible object stored in the magazine in a selected guide path aligned with the insertion/ejection guide path in the guide unit outward from the open side of the magazine into engagement by the insertion/extraction guide path of the guide unit for subsequent extraction from the guide unit, wherein the improvement comprises:

said guide unit having at least one additional guide path located on each side of the insertion/extraction guide path, each additional guide path having an extrance aligned with a corresponding guide path in the magazine adjacent to the selected guide path and diverging away from the insertion/extraction guide path; and

said ejection device having additional contact surfaces for pushing any objects stored in guide paths of the magazine adjacent to said selected guide path outward from the open side of the magazine into engagement by the corresponding diverging additional guide paths of the guide unit, whereby the objects pushed from said adjacent guide paths are bent away from the selected guide path to facilitate insertion of a flexible flat object into the selected guide path from the insertion/extraction guide path of the guide unit.

4,375,857

AUTOMATIC RAILWAY CONTROLLED BUFFER COUPLING

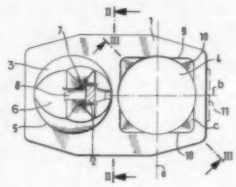
Wilhelm Günther, Rilkeweg 6, and Hilmar Forster, Grüner Platz 26 b, both of, 3340 Wolfenbüttel, Fed. Rep. of Germany

Filed Jun. 9, 1980, Ser. No. 157,550

Claims priority, application Fed. Rep. of Germany, Jun. 29, 1979, 2926301

Int. Cl.³ B61G *1/32, 3/16, 7/06*

U.S. Cl. 213—77 **7 Claims**



1. An improved automatic central buffer coupling plate for rail vehicles of the type having a side defining a vertical planar impact surface (**1**), a cone (**3**) projecting from and having a base adjacent the impact surface, and a funnel-shaped member (**4**) extending from a side of the plate opposite the impact surface, the funnel-shaped member and cone being uniformly spaced from a vertical median plane passing through the plate, the funnel-shaped member having a circular opening at the impact surface of a diameter about equal to that of the cone base for receiving a cone of an opposite coupling plate, comprising, in combination, the improvement wherein the cone is formed with a tip portion (**7**) on an end of the cone having a convex shape, and the funnel-shaped member is formed with an inwardly inclined chamfer (**10**) at the circular opening, having on the impact surface, the configuration of a square with sides (**9**) tangent to the circular opening.

4,375,858

CHILD RESISTANT CLOSURE DEVICE

Hemant D. Shah, Bombay, India, and Laurence Edzenga, Passaic, N.J., assignors to American Cyanamid Company, Stamford, Conn.

PCT No. PCT/US81/00435, § 371 Date Nov. 2, 1981, § 102(e) Date Nov. 2, 1981

PCT Filed Apr. 3, 1981, Ser. No. 319,180

Int. Cl.³ B65D *55/02*

U.S. Cl. 215—217 **9 Claims**

1. A locking means for a threaded container and closure comprising

A. a container having a neck portion; and on the external surface of said neck portion

I. a continuous first thread;

II. a ring adjacent the terminal end of said thread;

III. and at least one lug having

a. a contacting surface diagonally aligned with said first thread;

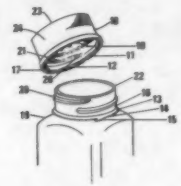
b. an upper surface adjacent to or lower than said ring; and

c. a height and radial thickness greater than said ring;

B. a closure having

I. a radially flexible inner flange, the terminal end of said inner flange coordinating with the internal surface of said neck; and

II. an outer flange having



a. a continuous second thread coordinating with said first thread; and

b. at least one tab adjacent the initial end of said second thread whereby said closure is threaded onto said container, said tab passes onto said contacting surface and is then engaged by the terminal surface of said lug.

4,375,859

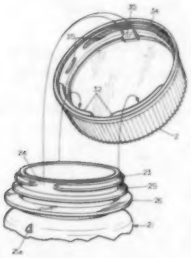
CHILD-RESISTANT PACKAGE

William E. Fillmore, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Nov. 9, 1981, Ser. No. 319,832

Int. Cl.³ B65D *55/02, 85/56;* **A61J** *1/00*

U.S. Cl. 215—223 **18 Claims**



1. A child-resistant package with a snap-on closure comprising

a container having a neck finish,

said neck finish including a first upper annular retaining bead, a second lower annular retaining bead spaced axially beneath the first annular bead and a flange extending radially outwardly and being axially spaced below the second bead,

said first annular bead having a notch therein,

said second annular bead being continuous,

a closure having a top and a peripheral skirt,

said skirt having a lifting tab on the outer surface thereof,

a first radially inwardly extending locking lug on the inner surface thereof adjacent the external lifting tab,

said skirt having at least one second radially inwardly extending locking lug located generally diametrically opposite from the lifting tab and axially below the plane of the first locking lug,

such that when the closure is assembled to the finish, the first locking lug is located below the first retaining bead and the second locking lug is located beneath the second retaining bead, and when the first locking lug is brought into registry with the notch, the closure can be removed by upward force on the lifting tab.

4,375,860

UNDERGROUND TANK WITH VOID-ELIMINATING CRADLE

Gerald G. Greaves, Jr., Houston, Tex., assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Mar. 30, 1981, Ser. No. 248,132

Int. Cl.³ B65D *8/04, 8/08, 88/06, 90/00*

U.S. Cl. 220—1 B **3 Claims**

1. A glass fiber reinforced plastic tank including an elongated generally cylindrical body portion and a pair of end cap portions respectively closing opposite ends of the body portion, the tank being adapted to be installed underground with a longitudinal axis of the body portion extending horizontally, and void-eliminating means preventing voids beneath the tank when the tank is installed in an excavated cavity in the ground and the cavity is backfilled, said void-eliminating means comprising hardened plastic foam filling the spaces generally defined by (a) an outer surface of a lower portion of the body portion of the tank, the outer surface extending substantially the full length of the body portion between the end cap portions, (b) a horizontal plane tangent to the bottom of the tank and extending substantially the full length of the body portion, and (c) a pair of planes diverging upwardly from the horizontal plane into tangency with the body portion of the tank respectively on opposite sides of a longitudinal axis thereof and extending substantially the full length of the body portion, a glass fiber reinforced plastic casing for the hardened plastic foam, the casing being generally defined by said planes and secured to the tank at the tangency of the upwardly diverging planes with the body portion thereof, said foam being provided in the spaces between the bottom horizontal plane tanqent and the tangency of the upwardly diverging planes.

4,375,861

OPENING MEANS FOR A CONTAINER

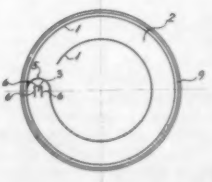
Holger L. Jepsen, Odense, Denmark, assignor to Haustrups Fabriker A/S, Odense, Denmark

Filed Sep. 15, 1980, Ser. No. 187,451

Claims priority, application Denmark, Oct. 3, 1979, 4148/79; Oct. 3, 1979, 4149/79

Int. Cl.³ B65D *17/36*

U.S. Cl. 220—274 **9 Claims**



1. A tabless hermetically sealable container having a first score line defining a tear-out member in a wall of the container,

and a second score line defining a rupturable perforation panel in said tear-out member having an end edge spaced from said first score line and side edges extending away from said first score line, said perforation panel providing an aperture for the insertion of an opener member into the container upon displacement of the perforation panel into the container;

wherein said end edge is rectilinear, and said end edge and said side edges provide corresponding edges on said tear-out member constituting reference abutments for said member to be employed in opening the container.

4,375,862

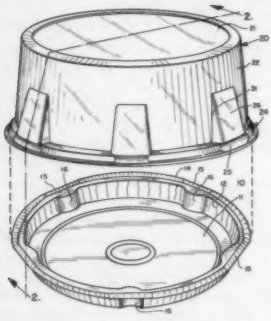
CONTAINER WITH DOME COVER

Roger A. Kurinsky, Palatine; Fred D. Alexander, Arlington Heights, and Michael E. Holzkopf, Libertyville, all of Ill., assignors to Ekco Products, Inc., Wheeling, Ill.

Filed Dec. 14, 1981, Ser. No. 330,142

Int. Cl.[3] B65D *41/06, 41/36*

U.S. Cl. 220—293 4 Claims



1. The combination of a circular container and a cover therefor having locking means for locking the cover to the container through rotational movement of the cover relative to the container, said container comprising a bottom wall having a side wall extending upwardly therefrom terminating in an outwardly extending rim, said cover comprising a top wall having a side wall depending therefrom terminating in an outwardly and downwardly extending flange adapted to seat on said container rim, holding means formed on the outer surface of the container side wall for gripping said container, and handle means formed on the outer surface of the cover side wall for grasping said cover.

4,375,863

MECHANISM FOR AUTOMATICALLY CLOSING A STORAGE CONTAINER

Felix Kappler, Reismühleweg 62, Winterthur, Switzerland

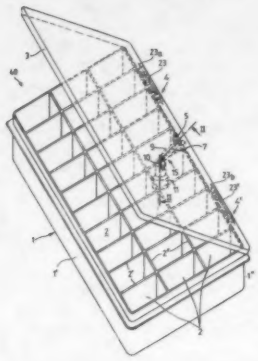
Filed Nov. 20, 1981, Ser. No. 323,356

Claims priority, application Switzerland, Dec. 3, 1980, 8920/80; Feb. 20, 1981, 1123/81

Int. Cl.[3] B65D *43/14, 51/04*

U.S. Cl. 220—334 8 Claims

1. A mechanism for closing a storage container such as a container divided to hold an assortment of parts, the storage container comprising a box-like part having a bottom, side walls and partition walls within said side walls, a cover hinged to said box-like part and displaceable between a closed position and an open position, first spring means for biasing said cover into the closed position, stop means for countering the action of said first spring means and retaining said cover in the open position, said stop means arranged to release said cover and return said cover to the closed position when the storage container is lifted or displaced from a support base, wherein the improvement comprises that said stop means includes an axially extending guide sleeve secured to and extending upwardly in the axial direction from said bottom of said box-like part, a stop pin positioned within and slidably displaceable in the axial direction of said guide sleeve between a first position where said cover is in the open position and a second position where said cover is in the closed position, second spring means for biasing said stop pin into the second position, an elongated supporting lever having a first end and a second end with said



first end pivotally connected to said cover, said stop pin in the open position of said cover being engageable with the second end of said support lever when said bottom of said container is resting on a support base so that said cover remains in the open position and when said bottom of said container is displaced from the support base said second spring means biases said stop pin into said guide sleeve and out of engagement with the second end of said support lever.

4,375,864

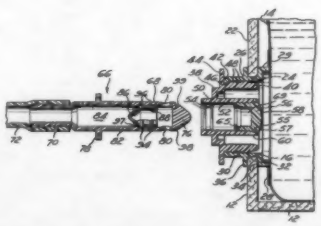
CONTAINER FOR HOLDING AND DISPENSING FLUID

Chester Savage, Irvine, Calif., assignor to Scholle Corporation, Irvine, Calif.

Filed Jul. 21, 1980, Ser. No. 170,541

Int. Cl.[3] B67B *7/24*

U.S. Cl. 222—81 7 Claims



1. A connector for dispensing fluids from a container having a fluid storage portion and a spout opening comprising:

(a) an elongate member having an interior channel to transport said fluid having an entrance from the exterior and said member being sized to closely fit within said opening; and

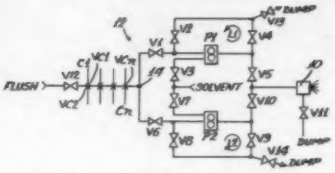
(b) a plug positioned within said opening which seals said opening through first snap fitting, said plug and said member being mutually engageable by means of a second snap fitting, said plug and said member being mutually slidable while engaged to permit said channel entrance to extend into the storage portion of the container to dispense fluid, said first fitting being more difficult to release than said second fitting is to effect, thereby ensuring that the mem-

ber and plug are mutually engaged before said plug and member are slid into the storage portion breaking the seal.

4,375,865
COLOR CHANGE SYSTEM FOR SPRAY COATING APPARATUS

Carl M. Springer, Park Ridge, Ill., assignor to Binks Manufacturing Company, Franklin Park, Ill.

Division of Ser. No. 177,399, Aug. 12, 1980, Pat. No. 4,337,282. This application Nov. 27, 1981, Ser. No. 325,140
Int. Cl.³ B67D 5/60
U.S. Cl. 222—135 10 Claims

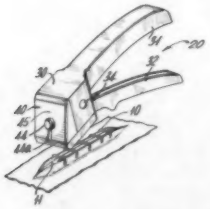


1. A color change system for supplying selected colors of coating materials to coating apparatus, comprising a pair of pumps each for providing coating material to the coating apparatus; and means for selectively and alternately connecting inlets to said pumps with supplies of coating material and solvent for the coating material, such that said pumps alternately provide different colors of coating material to the coating apparatus, and such that when one of said pumps provides coating material the other pump is connected with the solvent for continuously being cleansed of previously provided coating material for as long as said one pump is providing coating material.

4,375,866
SKIN CLIP APPLIER

Robert V. Giersch, Raleigh; Douglas K. Hoeppner, Apex, and William D. Webb, Cary, all of N.C., assignors to Edward Weck & Company, Inc., Research Triangle Park, N.C.

Filed Jan. 22, 1981, Ser. No. 227,569
Int. Cl.³ A61B 17/12; B25C 5/02
U.S. Cl. 227—19 7 Claims

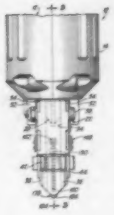


1. A skin clip applier comprising in combination a handle assembly and a skin clip cartridge assembly, said handle assembly comprising a handle pivotally connected within its length to a frame, means to bias one end of said handle away from said frame, a cam element attached to the opposite end of the handle and means for affixing the skin clip cartridge assembly in operative relation to said cam element of said handle assembly, said cartridge assembly comprising a skin clip delivery system adapted to present individual pre-formed skin clips serially to a pair of jaw elements pivotally mounted for deforming said skin clips, means to bias said deforming jaw elements away from each other, and means for affixing the handle assembly in operative relation to the jaw elements of said cartridge assembly to force said jaw elements into deforming relation to each of the skin clips, the handle and the cam element each having a longitudinal axis substantially perpendicular to the plane of said jaw elements.

4,375,867
ELECTRIC FASTENER DRIVING TOOL

Raymond F. Novak, Itasca, and Richard Doyle, Mt. Prospect, both of Ill., assignors to Duo-Fast Corporation, Franklin Park, Ill.

Continuation of Ser. No. 921,978, Jul. 5, 1978, abandoned. This application May 9, 1980, Ser. No. 148,365
Int. Cl.³ B25C 1/06
U.S. Cl. 227—109 17 Claims



1. In a fastener driving tool of the type including a housing defining a handle portion and a nose portion, a drive track defined in said nose portion, a driver blade mounted in said track and means for driving said blade, the improvement comprising a magazine assembly including a housing and a fastener support member, said fastener support member defined by first and second identical guide members spaced apart and of a configuration wherein each defines first and second fastener engagement portions, said first fastener engagement portions define a first gap between said first and second guide members of a narrower width than a second gap defined by said second fastener engagement portions between said first and second guide members and vertically below said first gap, said first fastener engagement portions adapted to engage fasteners of a first size and said second fastener engagement portions adapted to engage fasteners of a second size, said first and second fastener engagement portions further define a section spaced vertically above said first fastener engagement portions for surrounding the head of said fasteners of said first size.

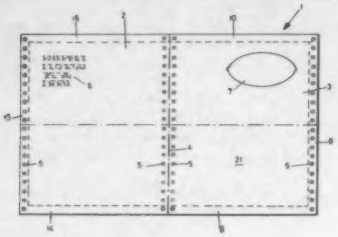
4,375,868
MAILING DEVICE

Allan H. Slotar, 34 A 12th St., Parkmore, Sandton, Transvaal, and Peter B. Cramer, P.O. Box 3652, Johannesburg 2000, both of South Africa

Continuation-in-part of Ser. No. 163,330, Jun. 26, 1980, abandoned. This application Sep. 11, 1981, Ser. No. 301,305
Int. Cl.³ B65D 27/00
U.S. Cl. 229—92.3 10 Claims

1. A mailing device comprising; a single sheet of paper having a center fold line which divides the sheet into first and second halves, the sheet being folded about said line so that one half overlies the other half; means adjacent the folded edge and the edge parallel to said fold facilitating the travel of the device through a printing unit in the folded state; means for permitting address information on a predetermined area of the first half to be viewed when the second half has been folded about said fold line on top of the first half; a fold line at right angles to the

center fold line and about which the sheet can be folded into four quarters; and detachable gummed margins for securing



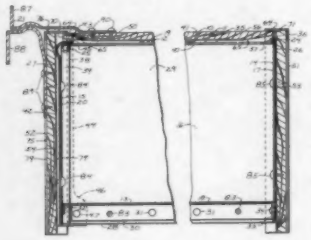
the sheet in its twice-folded position with the four quarters overlying one another.

4,375,869

PROTECTIVE COVERS OR ENCLOSURES FOR MAILBOXES

Gary H. Hatch, 590 Diane Cir., Casselberry, Fla. 32707

Filed Sep. 8, 1980, Ser. No. 185,256
Int. Cl.³ B65D *91/00*
U.S. Cl. 232—17 **10 Claims**



1. The combination comprising a rural mailbox having a generally rectangular center panel which has opposite side walls for the mailbox, and a cover for the mailbox comprising a generally rectangular slat assembly that is arranged to overlay the exterior surface of the center panel, said assembly comprising a plurality of elongated slats that are of substantially equal length and arranged to extend between the opposite edge portions of the center panel, said slats being arranged in parallel and in a row with one slat laterally of and adjacent to the next slat in the row, said cover further comprising flexible means located between said slat assembly and said center panel, and means located between said slat assembly and said center panel and joining said flexible means to each of said slats of said assembly, and said combination further comprising means fixing the slat assembly to the mailbox.

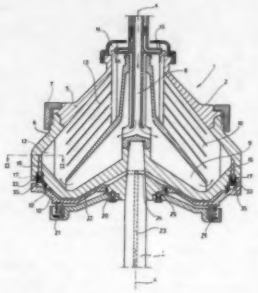
4,375,870

CENTRIFUGAL SEPARATOR WITH VALVED OUTLETS

Berth I. A. Bodelson, Tullinge, Sweden, assignor to Alfa-Laval AB, Tumba, Sweden

Filed Feb. 23, 1981, Ser. No. 237,431
Claims priority, application Sweden, Feb. 28, 1980, 8001551
Int. Cl.³ B04B *11/04*
U.S. Cl. 494—40 **9 Claims**

1. In combination with a centrifugal rotor mounted for rotation about an axis and having a separating chamber, a plurality of valves located at the outer periphery of the rotor and adapted to be opened during rotation of the rotor to discharge a separated medium from said chamber, each valve comprising a control member movable in the direction of said axis to open the valve, each valve also comprising an inner part and an outer part adapted for displacement relative to each other in the direction of the rotor axis and forming an inner space which is closed at one end and which communicates with the separating chamber, a first of said parts having a sleeve-shaped section of relatively hard and erosion-resistant material, said section extending in the axial direction of the rotor and having an opening for discharging medium from said space, said opening being covered by the other of said parts when the valve is closed, said other part having an annular end edge of relatively hard and erosion-resistant material, said control member having an annular abutment surface of rela-



tively soft material which is pressed in the axial direction of the rotor against said end edge when the valve is closed, whereby said abutment surface seals against the end edge to form a sealing place which prevents said medium from forcing its way through the valve, said end edge being operable by said relative displacement of the inner and outer parts to uncover said opening and thereby establish a communication between said inner space and ambient atmosphere, said opening being spaced from said abutment surface by a distance sufficient to prevent said medium from impinging upon said surface while discharging through the opening when said opening is uncovered by said end edge.

4,375,871

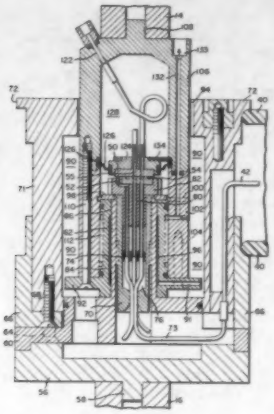
ROTATING SEAL FOR CENTRIFUGES

William A. Romanauskas, Southbury, Conn., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Apr. 1, 1981, Ser. No. 249,961
Int. Cl.³ B04B *11/00*
U.S. Cl. 494—41 **8 Claims**

1. In a continuous flow centrifugal apparatus having a housing and a rotor mounted on a drive shaft for rotation within said housing about the axis of said drive shaft, and a rotating seal having interengaged rotating and nonrotating members for

conveying fluids to and from said rotor, the improvement wherein:



the rotating seal is located about at the center of mass of said rotor and on said drive shaft axis.

4,375,872

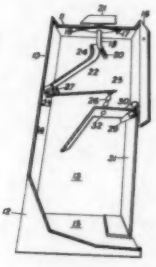
DRAFT CONTROL FOR STOVES AND FURNACES

Andrew J. Schrock, Rte. #1 Adario E. Rd., Shiloh, Ohio 44878

Filed Oct. 8, 1980, Ser. No. 182,797

Int. Cl.³ G05D *23/02*

U.S. Cl. 236—16 **2 Claims**



1. A draft control comprising p1 (a) an outer housing having a face wall and side walls, in said face wall formed a projection and adjacent an aperture accommodating

(b) a control rod comprising a pivot shaft, slightly off-centered within a notched disc affixed 90 degree to its axle, said notched disc communicating with said projection, restricting rotational movement of said pivot shaft to 180 degree and further relative with an eccentric formed under said notched disc of said control rod for adjusting the location of

(c) a Vee shaped bimetallic element, pivoted at its bottom, one end of said bimetallic element accommodating and in communication with said eccentric of said control rod;

(d) a retainer and shaft forming pivoting means for said Vee shaped bimetallic element, said retainer affixed to said one side wall;

(e) two parallel slightly spaced rods affixed to and between the lower edge of two of the said walls and further adjacent said bimetallic element, forming pivoting and self-adjustment means of

(f) a draft door with stiftening bends and one end bend and formed, pivoting between said parallel slightly spaced rods and further means for preferably chain connection from said draft door to other end of said vee shaped bimetallic element.

4,375,873

TEMPERATURE RESPONSIVE VALVE

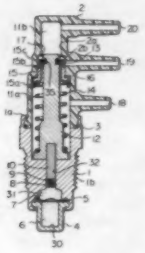
Katsunori Enomoto, Kariya; Tomomitsu Muramatsu, Hekinan, and Shiro Maeda, Kariya, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Sep. 15, 1981, Ser. No. 302,389

Claims priority, application Japan, Oct. 23, 1980, 55-150427[U]

Int. Cl.³ G05D *23/12*

U.S. Cl. 236—86 **2 Claims**



1. A temperature responsive valve comprising:

a first housing which comprises first, second and third ports arranged in this order and a valve seat surface provided in the vicinity of the second port, said first housing having a hollow portion which communicates with the three ports;

a second housing connected to the first housing;

a cylinder located in the vicinity of the second port in the first housing, said cylinder having a valve seat surface and defining a fluid escape space between the hollow portion of the first housing and the second port;

a valve body movable in the hollow portion of the first housing;

a single seal member provided on the valve body in the vicinity of the cylinder;

a spring for pressing the valve body and for bringing the seal member into contact with the valve seat surface of the cylinder, said spring pressing the cylinder against the first housing; and,

a thermal expansive member for moving the valve body against the spring in accordance with a change of an external temperature, so that when the external temperature is above a predetermined value, the seal member is brought into engagement with the valve seat surface of the first housing;

said three ports being arranged so that when the seal member is in engagement with the valve seat surface of the first housing, the first port is connected to the second port by means of the fluid escape space and the hollow portion of the first housing, and when the seal member is in engagement with the valve seat surface of the cylinder, the second port is connected to the third port by means of the fluid escape space.

4,375,874

ROLLED TISSUE DISPENSER

Samuel S. Leotta, Conshohocken; James G. Petro, Harleysville, both of Pa., and Arthur A. Ortner, Westville, N.J., assignors to Bradley Corporation, Menomonee Falls, Wis.

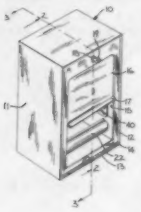
Filed Mar. 5, 1981, Ser. No. 240,908

Int. Cl.³ B65H *19/04*

U.S. Cl. 242—55.3 **4 Claims**

4. An improved roll tissue dispenser including a hollow

housing having a pair of compartments each having means for holding a roll of tissue, a hinged front piece for said housing, said front piece having a door opening, a sliding half door mounted in said opening, said door being movable from an original position closing one compartment to a second position closing the other compartment, and door control means for preventing the door from being moved from its original position until the roll of tissue in the other compartment is exhausted, wherein the improvement comprises a door control means which consists of a movable pawl which in its initial



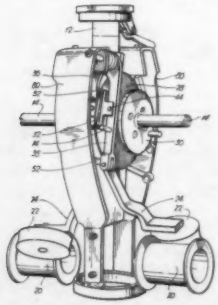
position prevents the door from being moved, a sensor which stops the pawl from being moved from its initial position until substantially all of the tissue on a tissue roll on the spindle in the other compartment has been exhausted, and a reversible spring which holds the movable pawl in its initial position until the door is forcibly lowered when substantially all the tissue on the tissue roll on the spindle in the other compartment is exhausted, said spring also preventing the door once lowered from being returned to its initial position until the hinged front piece is swung open whereupon the door can be raised.

4,375,875

CRADLE FOR A TWISTING MACHINE

Walter L. Richardson, Pointe Claire, Canada, assignor to Northern Telecom Limited, Montreal, Canada

Filed Jun. 19, 1981, Ser. No. 275,302
Int. Cl.³ B65H *59/06*
U.S. Cl. 242—156.2 **14 Claims**



1. A cradle for a twisting machine for filamentary material comprising:

a reel shaft for a half reel of filamentary material and rotatably mounted upon a support; and a tensioning device for the material, the tensioning device comprising: a brake disc coaxial with and rotatable together with the reel shaft and axially immovable relative to the shaft; two opposed brake pads disposed one on each side of the disc and located in position radially outwards on one side of the axis of the reel shaft;

a rotatable tensioning pulley having biasing means to urge the pulley with its rotational axis in one direction of movement and being movable in an opposite direction by a force acting against the biasing means; and

a brake activator comprising:

(a) two brake arms extending one on each side of the brake disc, and the pads mounted one upon each of the arms, the arms being pivotally movable towards and away from one another to move the pads towards one another to apply or increase a braking force upon the disc and away from one another to reduce or cancel the braking force;

(b) a brake operating means comprising a brake release linkage extending across the plane of and outwardly from the disc, the linkage pivotally connected to the two brake arms at two pivotal positions and actuable to move said pivotal positions and the brake arms towards each other and away from one another; and

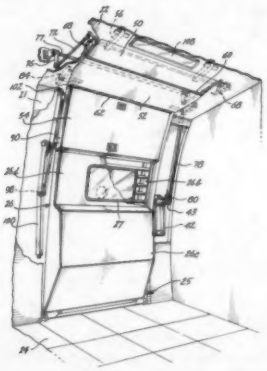
(c) a brake release connector positively connected to the brake release linkage and to the pulley to activate the linkage, when the pulley moves in said opposite directions, to move the said pivotal positions and the brake arms controllably away from one another and to activate the linkage, when the pulley moves in said one direction, to cause said pivotal positions and the brake arms to move controllably towards one another.

4,375,876

OVERHEAD SLIDING DOOR AND FOLDABLE CABIN PANEL ASSEMBLY FOR AN AIRPLANE

William L. Stewart, Everett, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Jun. 4, 1981, Ser. No. 270,260
Int. Cl.³ B64C *1/14*
U.S. Cl. 244—129.5 **13 Claims**



1. In combination with a convexly contoured vehicle fuselage having an exterior passenger doorway and a generally horizontal cabin ceiling with a ceiling opening therein above said doorway, and wherein the top of said doorway is lower than said cabin ceiling, an overhead sliding door and cooperable retracting, foldable cabin panel assembly comprising:

an overhead sliding door movable along a predetermined travel path between a closed position occupying said doorway and an overhead stowed position wherein at least a portion of said door is located above said cabin ceiling, said travel path extending upwardly through said ceiling opening from said doorway;

foldable interior cabin panels including an inboard ceiling panel, an outboard ceiling panel and a side panel successively hinged together edgewise for mutual folding motion about mutually parallel axes of rotation extending substantially parallel to said fuselage and said cabin ceiling, said inboard and outboard ceiling panels being opera-

ble to occupy inboard and outboard portions respectively of said ceiling opening with said door closed, said inboard ceiling panel being pivotably connected to said ceiling for swinging motion between a closed position occupying said inboard portion of said ceiling opening and a range of positions wherein said inboard ceiling panel is swung upwardly and inwardly therefrom about a pivot axis extending generally parallel to said fuselage and said cabin ceiling, said side panel depending downwardly from the outboard edge of said outboard ceiling panel with said door in said closed position to thereby cover a portion of the fuselage above the doorway; and

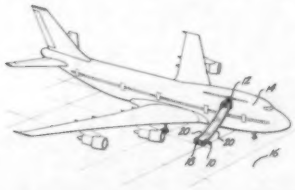
lost motion coupling means connecting said side panel to said door whereby said door travels upwardly alongside said side panel along a first portion of said travel path of said door, and whereby initial inboard motion of said door upon opening operates through said lost motion coupling and said side panel to partially fold said ceiling panels inboard along said ceiling opening to thereby permit said door to pass through said ceiling opening as said door travels over said first portion of said travel path, and further whereby said door engages said side panel for conjoint motion of said door and said side panel along a second portion of said travel path extending to the end of said travel path, and whereby said ceiling panels are swung upwardly and inwardly over said ceiling as said door is raised to said overhead stowed position at the end of said travel path.

4,375,877

ESCAPE SLIDE STOWAGE AND DEPLOYMENT SYSTEM

Thomas H. Shorey, Freeland, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Dec. 31, 1980, Ser. No. 221,899
Int. Cl.³ B64D *25/14*
U.S. Cl. 244—137 P **16 Claims**



1. An apparatus for stowing an inflatable escape slide on the floor adjacent the sill region of an elevated door and deploying said escape slide through the opening formed when said door is opened, said apparatus comprising:

base means positionable adjacent said door opening and securable to said floor;

deployment means including a plurality of substantially rectangular deployment links and a packboard having at least a bottom panel and a rear panel extending upwardly therefrom, said plurality of deployment links being hinged together to form a set of serially connected deployment links, the upper boundary of said packboard rear panel and the forward boundary of said base means being hinged to the oppositely disposed ends of said set of serially connected deployment links with said packboard being positionable on said base means with said set of serially connected deployment links extending between said upper boundary of said packboard rear panel and said forward boundary of said base means to define a storage space for said escape slide when it is in a deflated condition, said deployment means further including girt bar means, said girt bar means being installed in a manner which allows movement with one of said deployment links and being attachable to the upper end of a deflated escape slide placed in said storage space; and,

deployment actuation means for urging the assemblage of said packboard and said deployment links outwardly through said door opening by tipping said assemblage about said hinge between said forward boundary of said base means until said packboard exits said door opening and swings downwardly therefrom and into a position wherein said serially connected set of deployment links and said packboard rear panel extends downwardly from said door opening with said packboard bottom panel extending outwardly therefrom; and,

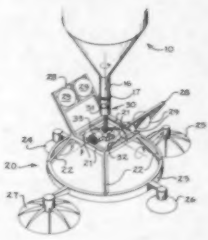
means for initiating inflation of said escape slide when said assemblage of said packboard and said deployment links is at a predetermined position of said downward swinging movement from said door opening to said position in which said deployment links and said packboard rear panel extend downwardly.

4,375,878

SPACE SATELLITE WITH AGILE PAYLOAD ORIENTATION SYSTEM

Thomas J. Harvey, Los Altos Hills, and Gary C. Gibson, Los Gatos, both of Calif., assignors to Lockheed Missiles & Space Company, Inc., Sunnyvale, Calif.

Filed Oct. 28, 1980, Ser. No. 201,560
Int. Cl.³ B64G *1/66*
U.S. Cl. 244—158 R **2 Claims**



1. An agile payload orientation system for a space satellite, said system comprising gimbal means for appending a body containing said payload to a main body of said satellite, said appended body also containing momentum exchange means responsive to external command for changing the orientation of said appended body, said gimbal means including bearings that enable rotation of said appended body relative to said main body about three mutually orthogonal axes, said axes having a common point of intersection that coincides with the center of mass of said appended body, thereby enabling said appended body to be moved without imparting motion to said main body, said system further comprising an attitude sensor mounted on said main body for detecting incipient motion of said main body relative to an inertial reference due to torque caused by frictional forces at said gimbal bearings when said appended body undergoes rotation relative to said main body, said attitude sensor generating a signal indicative of said frictional forces at said gimbal bearings, said payload orientation system further comprising torquer-resolver means responsive to said signal generated by said attitude sensor so as to apply countertorque to said main body, said countertorque being opposite to said torque caused by said frictional forces at said gimbal bearings so that no substantial net torque is applied to said gimbal bearings.

4,375,879

CABLE CLIP

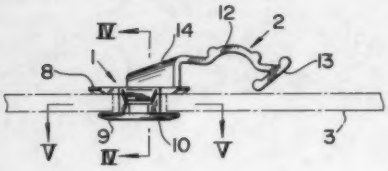
Masaharu Kojima, and Tsutomu Kadomiya, both of Toyota, Japan, assignors to Nifco Inc., Yokohama, Japan

Filed Sep. 4, 1981, Ser. No. 299,431

Claims priority, application Japan, Sep. 19, 1980, 55-132175[U]

Int. Cl.³ F16L 3/08

U.S. Cl. 248—73 1 Claim



1. In a cable clip which is molded of a synthetic resin and is attachable to a fitting hole formed by forming in a panel first and second holes which are respectively larger and smaller than each other and connected with each other by means of a connecting path, which cable clip comprises an engaging portion adapted to be attached to the fitting hole in the panel; a nipping portion integrally connected with said engaging portion and used for nipping one or more given cables on said panel, said engaging portion consisting of an upper flange having a diameter greater than that of said larger hole of said fitting hole, a lower flange opposed to the lower side of said upper flange and having a diameter smaller than that of the larger hole of said fitting hole and larger than that of the smaller hole of said fitting hole and a connecting shank adapted to connect the upper and lower flanges at regular intervals roughly equal to the thickness of said panel and formed in an oval cross section having a major diameter and a minor diameter respectively larger and smaller than the width of the connecting path of said fitting hole, and said nipping portion being extended from said upper flange in the direction of said major diameter of said oval connecting shank; the improved cable clip comprising portions of said upper flange and portions of said lower flange both of which are in distal relation to said connecting shank cooperating to cause at least one resilient rotation-regulating piece extended from the edge portion of said upper flange of said engaging portion in the direction of the minor diameter of said connecting shank to be oriented downwardly and the leading end thereof inserted into said connecting path thereby positively preventing rotation of said clip within said smaller hole.

4,375,880

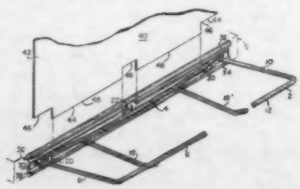
SUPPORT DEVICE AND DISPLAY ASSEMBLY

Robert L. Sinclair, Dedham, Mass., assignor to General Display, Inc., Medway, Mass.

Filed Jul. 10, 1980, Ser. No. 168,431

Int. Cl.³ E04G 5/06; F16L 3/08

U.S. Cl. 248—225.1 4 Claims



1. A support device for attachment to a channel member having opposed first and second flange portions defining opposed first and second grooves, said support device comprising an elongated base frame portion, said base frame portion being a substantially straight single strand of wire of sufficient resiliency to comprise a leaf spring, dependent frame portions extending from said base frame portion, first connector means fixed to said base frame portion and comprising first and second projections proximate either end of said base frame portion, respectively, and extending in a first direction therefrom, and second connector means fixed to said base frame portion and comprising a third projection disposed centrally of said base frame portion and extending in a second direction therefrom, said first and second directions being generally opposite, junctures of said first, second and third projections with said base frame portion being in substantial alignment when said device is in an unflexed condition, said first and second projections being adapted, upon flexure of said base frame portion, to enter said first groove and abut said first flange portion, and said third projection being adapted to enter said second groove and abut said second flange portion, said base frame portion being adapted, by virtue of its wire-like leaf spring structure, to urge said first and second projections into seating engagement in said first groove and said third projection into seating engagement in said second groove, said base frame portion being adapted to remain flexed when said projections are in said seating engagements such that in the vicinity of said first and second projections said base frame portion is flexed toward said second flange and in the vicinity of said third projection said base frame portion is flexed toward said first flange, said base frame portion being adapted, upon removal thereof from said channel member, to return to its substantially straight configuration.

4,375,881

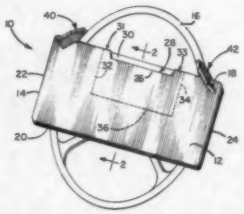
PORTABLE DESK FOR USE WITH AUTOMOBILE STEERING WHEEL

Stephen A. Mitchell, 192 Adam St., West Newton, Mass. 02165

Filed Jan. 23, 1981, Ser. No. 227,590

Int. Cl.³ A47B 19/00

U.S. Cl. 248—441 B 9 Claims



1. A portable reversible desk for detachable mounting on and support by the steering wheel of a motor vehicle comprising;

(a) an inner core of uniform thickness having top and bottom smooth, planar surfaces for the support of writing material and being defined by an elongated top edge of predetermined length;

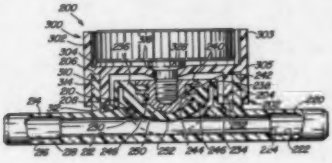
(b) a pocket in said top edge for the holding of writing materials; and

(c) means for detachably holding the desk to the rim of the steering wheel which comprises a pair of spaced-apart flat, elongated holding clips, one holding clip being located along and perpendicular to the top edge of the desk and at one end thereof so as to be disposed equidistantly on each side of the said top and bottom surfaces and the other holding clip being located along the top edge of the desk at the other end, said flat holding clips being slanted inwardly toward one another and forming an acute angle with the top edge of the desk.

4,375,882
IN-LINE FLOW CONTROL APPARATUS

Lloyd J. Schreiber, Jr., 211 Cloverdale Dr. Rte. 1, Whitley Heights, Clayton, N.C. 27520

Filed Oct. 27, 1980, Ser. No. 200,987
Int. Cl.³ F16K 7/12
U.S. Cl. 251—266 4 Claims



1. Valve apparatus for controlling the flow of intravenous fluids, comprising, in combination:

housing means, including a cylindrical portion having a bottom part;

inlet bore means connected to the bottom part of the housing means for providing a flow of fluid to the housing means;

outlet bore means connected to the bottom part of the housing means for providing a flow of fluid away from the housing means;

valve shell means disposed in the cylindrical portion of the housing means and having a portion movable in the housing means for controlling the flow of fluid through the housing means between the inlet bore means and the outlet bore means, including

a radially outwardly extending flange adapted to be secured to the housing means,

an outer cylindrical portion having a bottom portion secured to the flange and having a top portion,

an inner cylinder portion movable upwardly and downwardly in the housing means for controlling the flow of fluid,

a web connecting the inner cylinder portion to the top portion of the outer cylindrical portion,

a bore in the inner cylinder portion,

a pair of flanges spaced apart from each other in the bore and extending radially inwardly and defining an upper slot between them,

a concave bottom closing the inner cylinder portion,

a lower slot disposed between the concave bottom and the upper slot, and

a convex bottom secured to the inner cylinder portion and movable therewith vertically upwardly and downwardly and comprising the exterior of the concave bottom;

valve core means disposed in the bore and secured to, and movable with, the valve shell means, including

a first flange disposed in the upper slot of the valve shell means and a second flange disposed in the lower slot of the valve shell means for securing the valve core means and the valve shell means together,

a convex bottom disposed in the concave bottom of the valve shell means, and

a threaded bore; cap means including

an outer cylinder wall having an upper portion and a lower portion,

an inner cylinder wall spaced apart from the lower portion of the outer cylinder wall and disposed on the radially outwardly extending flange of the valve shell means for securing the valve shell means to the housing means,

a circular bore defined between the lower portion of the outer cylinder wall and the inner cylinder wall for receiving the cylindrical portion of the housing means for securing the cap means to the housing means,

a central wall secured to the outer cylinder wall between the upper and lower portions and to the inner cylinder wall, and

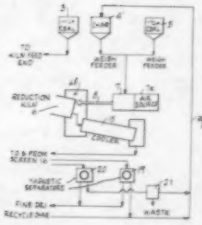
an aperture extending through the central wall; and

screw means rotatably secured to the valve core means for moving the valve core means and the valve shell means to control the flow of fluid through the housing means, including a head disposed on the central wall of the cap means and a threaded shank secured to the head and extending through the aperture in the central wall and into the threaded bore of the valve core.

4,375,883
SYSTEM FOR RECYCLING CHAR IN IRON OXIDE REDUCING KILNS

Vitie P. Keran, and Alan C. Baker, both of Harriman, Tenn., assignors to The Direct Reduction Corporation, New York, N.Y.

Division of Ser. No. 132,806, Mar. 24, 1980, Pat. No. 4,337,084.
This application Nov. 6, 1981, Ser. No. 318,966
Int. Cl.³ C21B 13/08
U.S. Cl. 266—91 9 Claims



1. A system for directly reducing materials containing iron oxides using solid carbonaceous materials as the fuel and reductant and of the type comprising:

a rotary kiln having a feed end with an opening for receiving the iron-oxides-containing materials therethrough and a discharge end with an opening for discharging the product therefrom;

means for feeding a portion of the carbonaceous materials into the feed end opening of the kiln with the iron-oxides-containing materials to form a solids bed therein;

means for feeding the remainder of the carbonaceous materials through the discharge end opening of the kiln; and

means for separating the charred reductant from the discharge product;

wherein the improvement comprises:

means for recycling the charred reductant into the discharge end of the kiln by feeding it through the discharge end opening into the solids bed, said recycling means comprising:

bin means for collecting said separated charred reductant;

metering means for conveying said charred reductant from said bin means to the discharge end of said kiln; and

means at the discharge end of said kiln for receiving said charred reductant from said metering means and injecting it through the discharge end opening.

4,375,884

APPARATUS FOR THE CONTROLLED COOLING OF WIRE ROD FROM ITS ROLLING TEMPERATURE

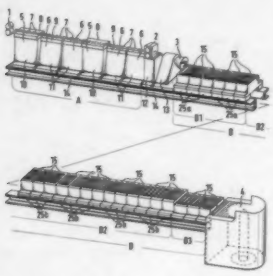
Johann Grotepass, Hösel, Fed. Rep. of Germany, assignor to SMS Schloemann-Siemag Aktiengesellschaft, Dusseldorf, Fed. Rep. of Germany

Filed Feb. 9, 1982, Ser. No. 347,316

Claims priority, application Fed. Rep. of Germany, Feb. 14, 1981, 3105492

Int. Cl.³ C21D 9/52

U.S. Cl. 266—115 12 Claims



1. Apparatus for the controlled cooling of wire rod from its rolling temperature, comprising:

(a) an elongate base;

(b) a first cooling assembly mounted on the base and composed of a plurality of modules each having a length equal to a predetermined modular length multiplied by an integar, said first cooling assembly being adapted to guide the wire rod rectilinearly and to cool it with water;

(c) a turn-laying unit mounted on the base following the first cooling assembly for forming the wire rod into turns and laying these turns in a staggered disposition;

(d) and a second cooling assembly mounted on the base following the turn-laying unit for receiving the staggered turns and conveying these continuously and composed of a plurality of modules each having a length equal to the said modular length multiplied by an integer;

(e) the turn-laying unit being disposable on the base selectively at a plurality of different positions along the base, whereby the lengths of the cooling assemblies can be changed by selection of the disposition of the turn-laying unit and of the modules composing said assemblies.

4,375,885

REVERBERATORY FURNACE

Shigeyuki Shigihara, Ise, and Masahiro Tadokoro, Mie, both of Japan, assignors to Shinko Electric Co., Ltd., Nihonbashi, Japan

Filed Dec. 4, 1980, Ser. No. 212,882

Claims priority, application Japan, Feb. 13, 1980, 55-17044; Jul. 31, 1980, 55-109477[U]

Int. Cl.³ C21C 5/04; F27D 9/14

U.S. Cl. 266—214 12 Claims

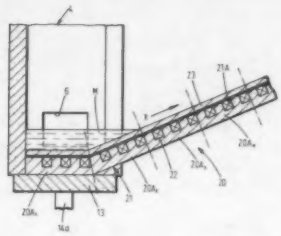
1. A reverberatory furnace comprising:

(a) a reverberatory furnace body for melting metal and holding molten metal, said reverberatory furnace body including an opening well;

(b) an electromagnetic trough for transporting molten metal from said reverberatory furnace body upwardly and slantly, said electromagnetic trough including:

(i) means for generating a travelling magnetic field comprising an iron core having grooves therein and AC coils within said grooves, said iron core comprising a plurality of core sections arranged in a lengthwise direction relative to said electromagnetic trough; and

(ii) a refractory bottom board arranged on said magnetic field generating means, said bottom board and said magnetic field generating means constituting a bottom portion of said electromagnetic trough, such that at least one portion of the first of said core sections when viewed from the lower side of said electromagnetic



trough and the corresponding portion of said bottom board above said portion of the first of said core sections are horizontal; and

(c) means for guiding the molten metal from said electromagnetic trough to said opening well.

4,375,886

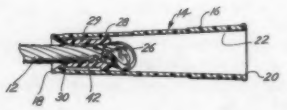
JUMP ROPE

Louis G. Muys, Elgin, Ill., assignor to Strombecker Corporation, Chicago, Ill.

Filed Dec. 19, 1980, Ser. No. 218,255

Int. Cl.³ A63B 5/20

U.S. Cl. 272—75 7 Claims



1. In a jump rope assembly comprising a rope with a handle joined to each end of the rope, said handle having an internal passage therein and an internal abutment shoulder adjacent one end, a tubular member journaled for rotation in each handle, said tubular member having an annular flange on the exterior thereof adjacent one end that abuts the inner surface of the handle over only a relatively small contact surface to provide minimum friction between the tubular member and the handle, said tubular member having an opening therethrough, the rope being bent over upon itself and drawn into the opening in the tubular member to secure the rope fixedly to the tubular member without knotting the rope and without fasteners, the opening in the tubular member being tapered with a taper that increases from the entry opening into the tubular member to accommodate the bent over end of the rope, the end of the tubular member remote from the annular flange abutting the abutment shoulder, whereby in use, each said tubular member can rotate easily within its associated handle.

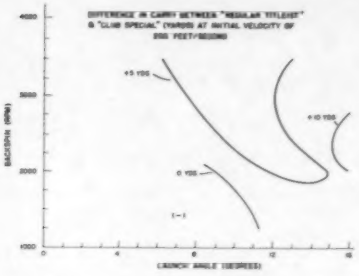
4,375,887
METHOD OF MATCHING GOLFER WITH GOLF BALL, GOLF CLUB, OR STYLE OF PLAY

Francis deS. Lynch; Walter L. Reid, Jr., both of Mattapoisett, and John W. Jepson, Marion, all of Mass., assignors to Acushnet Company, New Bedford, Mass.

Continuation of Ser. No. 802,250, May 31, 1977, abandoned, which is a continuation of Ser. No. 626,712, Oct. 29, 1975, Pat. No. 4,063,259. This application May 9, 1979, Ser. No. 37,315

Int. Cl.³ A63B *69/36*

U.S. Cl. 273—32 H **9 Claims**



1. A method for analyzing a golfer for matching said golfer to a particular golf ball, golf club, or style of play comprising the steps of:

(a) measuring a golfer's launch conditions when a selected golf ball is hit by said golfer using a selected club and his normal style of play, said launch conditions including:

(i) the initial velocity of said selected golf ball when hit by said golfer;

(ii) the initial spin velocity imparted to said selected golf ball; and

(iii) the launch angle of said selected golf ball;

(b) comparing the golfer's measured launch conditions to predetermined recorded sets of data which interrelate initial velocity, initial spin velocity, and launch angle to carry distance at a plurality of values of each of these parameters for each of a plurality of different golf balls, each of said golf balls, including said selected golf ball, having different aerodynamic properties;

(c) matching said golfer to a particular golf club, a style of play, or a golf ball from among the plurality of different golf balls in accordance with desirable performance noted from the comparison of said golfer's measured launch conditions to the conditions recorded in said predetermined recorded sets of data.

4,375,888
GOLF BALL DRIVE LENGTH INDICATING APPARATUS

Leland J. Wilcox, 75 Queens Dr., 7085 SE. Bloomfield Rd., Des Moines, Iowa 50320

Filed Mar. 16, 1981, Ser. No. 244,139

Int. Cl.³ A63B *69/36*

U.S. Cl. 273—184 R **4 Claims**

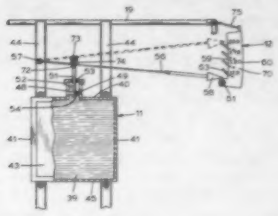
1. Apparatus for indicating the drive length of a practice driven golf ball comprising:

(a) an upright net supporting frame structure having a rear section and a pair of side sections projected forwardly in a transversely spaced relation from opposite ends of said rear section,

(b) means on the rear section for having applied thereto the impact forces of a driven golf ball including a liquid filled container having only a front wall formed of a resilient material,

(c) means on the frame structure for visually indicating in linear length the magnitude of the impact force applied on said front wall by a driven golf ball,

(d) chamber means on the container having one side thereof exposed directly to the liquid in said container for receiving liquid displaced from the container by the impact



force of a driven golf ball against the front wall thereof, and

(e) means movable directly in response to the volume of displaced liquid received in said chamber means through the one side thereof for transmitting to said indicating means the magnitude of the impact force.

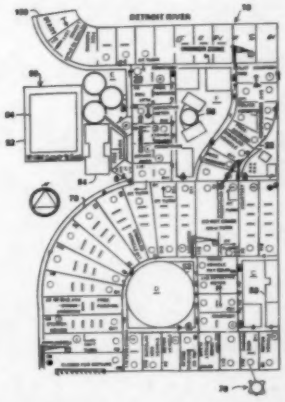
4,375,889
TRAFFIC BOARD GAME APPARATUS

Nora A. Burkett, 12728 Monica, Detroit, Mich. 48238

Filed Jul. 11, 1977, Ser. No. 814,450

Int. Cl.³ A63F *3/00*

U.S. Cl. 273—254 **2 Claims**



1. A traffic complaint rules game for pedestrians and vehicles comprising:

a game board having a plurality of intersecting streets imprinted thereon to symbolize a geographical section of a city, the streets dividing said board into a plurality of blocks with moving traffic and parking regulations that include stop signs, traffic control devices, fire hydrants, parking meters, public buildings, businesses and a residential section, subdivided into a plurality of numbered spaces; with traffic control devices, signposts, fire hydrants, parking meters, and pedestrian squares;

an inset card-holding tray carried by said game board on a portion adjacent one of said streets, for gold and blue coded cards;

a plurality of playing traffic violation cards disposed in said tray, each of said playing traffic violation cards being

provided with indicia representing a traffic violation with illustrations and the fine associated with said violation;

a plurality of mileage markers indicative of a prescribed travel by a player along said streets of said game;

a plurality of playing pieces representing the vehicle as vehicle plates, adapted to move along said numbered spaces on each of said streets;

a spinner speedometer mechanism having an octagon shape and adapted to indicate a metric vs. miles conversion, said spinner further indicating the number of spaces that a player may move said playing pieces;

a plurality of color-coded, player directive symbols strategically located on the spaces of said streets, each of said color-coded symbols providing instructions to the player who lands in the space associated with such symbols, a selected number of said symbols instructing said player to utilize one of said playing cards; and

a plurality of decision cards including a motor vehicle card, a pedestrian card, a bicycle card, a good driver card, and a courtesy gas card.

4,375,890

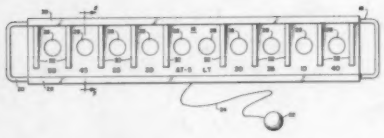
TETHERED PROJECTILE GAME DEVICE

Spencer Thomas, 3628 Goode, Montgomery, Ala. 36105

Filed Sep. 18, 1980, Ser. No. 188,550

Int. Cl.³ A63B *67/10*

U.S. Cl. 273—320 **18 Claims**



1. A game device comprising:

a projectile;

an elongate base plate, a plurality of projectile receiving pockets formed at spaced locations along the length of said base plate and shaped to receive said projectile;

a divider ridge disposed on either side of a majority of said projectile receiving pockets;

a flexible cord connecting said projectile to said device whereby said projectile can hang freely downward from said device;

a handle disposed at each longitudinal end of said base plate;

said base plate having such a length, and said handles being so constructed, that each handle can be simultaneously gripped by a separate hand of one person to dispose the lengthwise dimension of said device between the left and right hands of the one person, and said flexible cord having a length sufficient so that said projectile can be placed in any one of said projectile receiving pockets whereby the one person simultaneously gripping both of said handles can attempt to manipulate said base plate and swing said projectile upward from its freely hanging position and generally away from the lengthwise dimension of said device into one of said projectile receiving pockets by the motion.

4,375,891

SEAL BETWEEN A TURBINE ROTOR OF A GAS TURBINE ENGINE AND ASSOCIATED STATIC STRUCTURE OF THE ENGINE

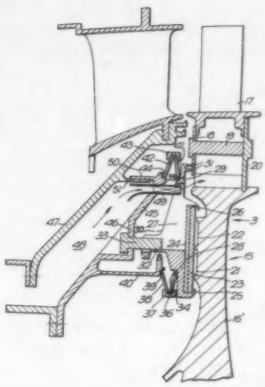
George Pask, Stanton-by-Bridge, England, assignor to Rolls-Royce Limited, London, England

Filed Apr. 21, 1981, Ser. No. 256,146

Claims priority, application United Kingdom, May 10, 1980, 8015556

Int. Cl.³ F01D *5/08, 5/18;* F16J *15/16*

U.S. Cl. 277—3 **7 Claims**



1. In a gas turbine engine having a turbine rotor and associated static structure, the improvement in a seal structure between the turbine rotor and the associated static structure comprising:

a flexible open triangulated supporting frame coaxial with said turbine rotor and having an inner ring and an outer ring connected together by links;

means operatively carrying said triangulated supporting frame from said static structure, said means permitting relatively axial movement of said triangulated supporting frame relative to said static structure and to said rotor without permitting relative rotational movement between said triangulated supporting frame and said static structure;

a thin flexible annulus of low friction material carried by one ring of said triangulated frame structure, said annulus of low friction material having a face opposing a first annular surface on said rotor and forming therebetween an air bearing;

an annular air seal between said turbine rotor and said triangulated supporting frame, said seal being defined by a second annular surface on said turbine rotor and a plurality of axially projecting fins from the other ring cooperating with said second annular surface of said rotor; and

said flexible open triangulated supporting frame and said thin flexible annulus of low friction material accommodating distortions and vibrational movements of said turbine rotor thereby permitting said fins to follow said rotor.

4,375,892

OIL WELL DRILLING RIG MOVER

Cecil Jenkins, and Joseph R. Woolslayer, both of Tulsa, Okla., assignors to Lee C. Moore Corporation, Tulsa, Okla.

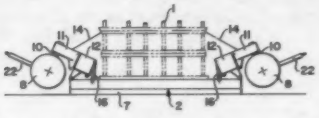
Filed Apr. 27, 1981, Ser. No. 257,775

Int. Cl.³ B60P *1/02*

U.S. Cl. 280—43.23 **9 Claims**

1. An oil well drilling rig mover comprising a pair of laterally spaced dollies, braces between the dollies and detachably connected thereto, each of the dollies including a beam for

resting on a support, a pair of laterally spaced wheels at each end of the beam, an axle connecting each pair of wheels and normally extending transversely of the beam, a tiltable support member above each end of the beam, means pivotally connecting each support member to the underlying beam on a horizontal axis extending transversely of the beam, an arm extending outwardly from the outer end of each of said support members, means for selectively rigidly connecting each arm to the adjoining support member in either of two laterally spaced positions, a rotatable shaft extending downwardly from the outer end of each arm, means connecting the lower end of the shaft to the central portion of the underlying axle of a pair of said wheels, and means connected to the beam and support members for tilting the support members away from each other to lift said beam relative to said wheels, the two beams and the braces forming a skid base for a drilling rig, and means for turning said shafts to permit the skid base to be moved laterally.

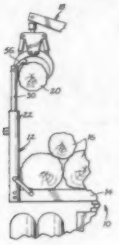


4,375,893

EXTENDIBLE BUNK STAKE

Arney L. Curtis, P.O. Box 232, Canyon City, Oreg. 97820

Filed Aug. 10, 1981, Ser. No. 291,376
Int. Cl.³ B60P *7/06*
U.S. Cl. 280—146 **8 Claims**



1. An extendible bunk stake for a log truck and the like, comprising

an upright post adapted to be mounted on the truck for confining a log load thereon,

an elongate extension member slidably mounted on said post for axial shifting thereon between a lowered position and a raised position where said member functions to extend the height of the stake,

latch means on said post for locking said member releasably in its raised position,

an arm mounted on said member, at the upper end thereof, for shifting between an upwardly projecting position and an inwardly projecting position where the arm is adapted to be engaged by a log being raised adjacent the side of the stake facing the truck, to raise the stake from its lowered toward its raised position, and

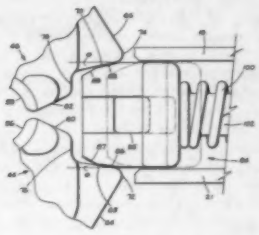
locking means interposed between said extension member and said arm adapted for holding the latter releasably at its inwardly projecting position, as the extension member is being raised by a log engaging the arm, and for releasing such arm for movement toward its upwardly projecting position upon continued upward movement of such a log beyond the point where said extension member has reached its raised position.

4,375,894

HITCH HEAD HAVING JAWS AND LOCK BLOCK WITH COOPERATING TAPERED SURFACES

James C. Hammonds, St. Charles, Mo., assignor to ACF Industries, Incorporated, New York, N.Y.

Filed Jun. 12, 1980, Ser. No. 158,961
Int. Cl.³ B62D *53/08, 53/10, 53/12*
U.S. Cl. 280—433 **9 Claims**



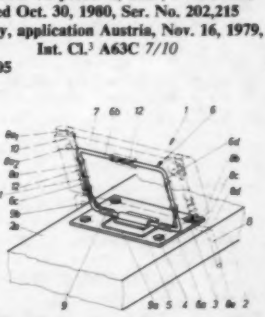
1. A hitch head or fifth wheel comprising a pair of pivotable jaws adapted in closed position to hold in place a kingpin of a highway trailer; a horizontally movable lock block engaging the rear portion of the jaws and holding the jaws in closed position; said lock block being movable to a position out of engagement with the jaws to allow exit of the kingpin; each of said jaws having a tapered rear surface which receives said lock block; said lock block having a first pair of cooperating tapered surfaces which engage said jaw tapered surfaces, thereby tending to reduce frictional drag when the lock block is moved to open position and to closed position, tending to compensate for manufacturing tolerances which tend to create a loose fit with the kingpin, to avoid misalignment between the lock block and the engaging surfaces of said jaws, and tending to compensate for wear in the engaging surfaces of the jaws and lock block; and a second pair of tapered surfaces making a greater angle than said first tapered surfaces and extending to the inner edge of said lock block which allows said jaws to clear said lock block as the jaws move between open and closed positions.

4,375,895

SKI BRAKE

Tibor Szasz, Vienna, and Kurt Liedl, Petronell, both of Austria, assignors to TMC Corporation, Baar, Switzerland

Filed Oct. 30, 1980, Ser. No. 202,215
Claims priority, application Austria, Nov. 16, 1979, 7311/79
Int. Cl.³ A63C *7/10*
U.S. Cl. 280—605 **5 Claims**



1. In a ski brake having a braking mechanism which has two braking arms and an operating pedal means which supports

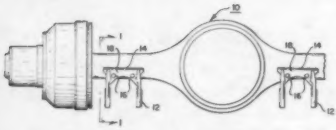
said braking arms, said braking mechanism being supported pivotally by a pivot axle means mounted on a holding plate adapted to be secured to the upper side of a ski, said pivot axle means supporting said braking mechanism for movement about an axis which extends substantially at a right angle with respect to the longitudinal axis of said ski, said braking mechanism being pivotal about said axis against the force of an erecting spring from a braking position into a retracted position, each braking arm being maintained in the retracted position of the braking mechanism above the upper side and inwardly of the two side surfaces of the ski by a force applied to an operating plate part of said operating pedal means and a braking arm extension operable by said operating plate, wherein after the operating pedal means becomes free, for example after a fall or a stepping out of the ski binding, the two braking arms project below the running surface of the ski, the improvement comprising wherein the braking mechanism is supported on the holding plate by interpositioning a support frame which is constructed of a multiply bent spring wire of which at least one individual section forms said pivot axle means for said support frame on said holding plate, the individual adjoining sections of the wire forming said support frame being connected to the wire section(s) which forms said pivot axle means, said adjoining sections forming at least one of an approximate square and an omega; wherein the sections of wire forming said support frame are coplanar and remain coplanar throughout the range of movement of said ski brake; and wherein connecting means are provided for releasably connecting said operating plate to said support frame, said releasable connection effecting a fixed positioning of said operating plate on said support frame.

4,375,896

SUSPENSION HANGER BRACKET

Lawrence G. Barnes, Troy, Mich., assignor to Rockwell International Corporation, Pittsburgh, Pa.

Filed Dec. 29, 1980, Ser. No. 220,391
Int. Cl.³ B60G *11/04*
U.S. Cl. 280—718 **5 Claims**



1. In an automotive axle of the type having a hanger bracket attached to said axle by horizontal welds, said hanger bracket is capable of receiving a suspension member therein, the improvement comprising: a fulcrum element on said hanger bracket; said fulcrum element interposed between the point where the load is imparted by said suspension member to said hanger bracket and said weld on the mounting flange of said hanger bracket, said fulcrum element capable of preventing load reversals from occurring in said welds thereby adversely affecting the fatigue life of said welds, said fulcrum element is at least one bolt in said hanger bracket, said bolt extending through said hanger bracket and into contact with said axle.

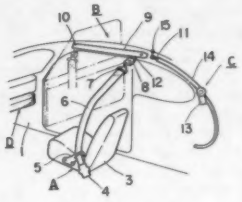
4,375,897

COUPLING FOR JOINING A DRIVE WIRE TO A BELT TRANSFER MEMBER

Juichiro Takada, 3-12-1, Shinmachi, Setagayaku, Tokyo, Japan

Filed Jan. 19, 1981, Ser. No. 226,254
Claims priority, application Japan, Jan. 23, 1980, 55-5927
Int. Cl.³ B60R *21/02*
U.S. Cl. 280—804 **1 Claim**

1. In a passive vehicle occupant restraint belt system having a restraint belt, a guide rail, a belt transfer member coupled to a portion of the belt and movable along the guide rail, and drive means including a drive wire for moving the transfer member along the guide rail between occupant-restraining and occupant-releasing positions in response to closing and opening of the vehicle door, a coupling assembly joining the drive wire to the transfer member and comprising a post affixed to the transfer member and including at least one retaining shoulder facing the transfer member, a resilient coupling member having a multiplicity of radially arranged resilient tangs, the free ends of which define a hole that is normally slightly smaller than the post cross section, the coupling member being receivable on the post with the free ends of the tangs resiliently engaging the post and stopped by the shoulder from sliding off the end of the post, and a connector terminal affixed to the end



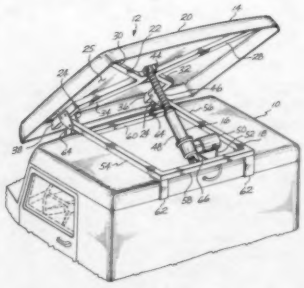
of the drive wire, the terminal having a hole receiving the post and a pair of side flanges, each of which includes a locking shoulder that faces away from the free end of the terminal, and the coupling member further including a pair of generally L-shaped side retainer flanges that engage the side flanges of the terminal and a pair of lugs that engage the respective locking shoulders of the terminal, whereby the coupling member is adapted to be pre-assembled with the terminal on the drive wire and the coupling assembly is adapted to be finally assembled to connect the drive wire to the transfer member by pushing the pre-assembled coupling member and terminal onto the post.

4,375,898

AIR DEFLECTOR ASSEMBLY

Donald L. Stephens, Bellevue, Wash., assignor to Paccar Inc., Bellevue, Wash.

Filed Jul. 28, 1980, Ser. No. 172,793
Int. Cl.³ B62D *35/00*
U.S. Cl. 296—1 S **22 Claims**



1. An air deflector assembly for reducing aerodynamic drag on a tractor-trailer vehicle or the like, comprising:

a deflector panel being substantially rectangular in top plan view and adapted to be pivotally mounted above the roof of said tractor, said panel including a stiffener having a plurality of intersecting segments extending along said panel in generally diagonal directions toward respective

corners of said panel and tending to increase the torsional stiffness of said panel; and

a single, adjustable strut engaging said panel near the intersection of said segments and permitting said panel to be moved between a retracted position and one or more operating positions.

4,375,899

PROTECTOR FOR MOVABLE PANEL OF ROOF STRUCTURE

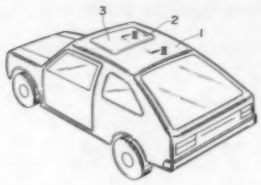
Yasuo Kajiyama, Nishikawada; Kazuo Yokoyama, Mibu, and Yoshihiro Yamakami, Ishibashi, all of Japan, assignors to Nissan Motor Company, Ltd., Yokohama, Japan

Filed Jan. 14, 1981, Ser. No. 224,909

Claims priority, application Japan, Jan. 21, 1980, 55-4551

Int. Cl.³ B62D *25/06*

U.S. Cl. 296—213 **6 Claims**



1. A roof structure for a vehicle, comprising:

a roof having an aperture, and a flange secured to said roof and extending downwardly therefrom to define said aperture;

a frame secured to said flange, said frame defining a water collecting channel extending along said flange;

a movable panel mounted on said roof and connected for movement between an open position wherein said aperture is exposed, and a closed position wherein said panel covers said aperture, said panel having a peripheral edge;

a protector mounted on said movable panel peripheral edge, said protector including a portion disposed facing said flange between said edge and said flange with a clearance therebetween when said movable panel is in its closed position, said protector including an integral downwardly extending lip spaced inwardly from said portion of said protector relative to said panel, said integral downwardly extending lip being disposed above said water collecting channel when said movable member is in its closed position.

4,375,900

CONTROL SYSTEM OF AND DEVICE FOR MEMORIZING, READING AND REPRODUCING THE POSITION OF MATERIAL TO BE CONTROLLED

Akifumi Tachibana, Goshonouchi; Minoru Watanabe, Shinnaka, and Takanori Shigihara, Hyogo, all of Japan, assignors to Kabushiki Kaisha Morita Seisakusho, Kyoto, Japan

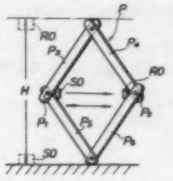
Filed Jul. 25, 1980, Ser. No. 172,428

Claims priority, application Japan, Aug. 1, 1979, 54-98793

Int. Cl.³ A47C *3/20*

U.S. Cl. 297—330 **8 Claims**

1. A control method of memorizing and reading and producing the position of a material to be controlled, said method being a system of memorizing the distance between a first member and a second member which are in a relative distance variable relation on a straight line and reading and reproducing the same in response to command, said system further comprising (a) arranging an ultrasonic transmitter and an ultrasonic receiver in an opposed relation with each other on a straight line so as to interlock with the linear movement of said two members; (b) exciting said transmitter in a periodically timed relation to thereby send forth an ultrasonic pulse and receiving pulse by said receiver; (c) detecting the received pulse by an electrical means and sending forth the received pulse; (d) generating a memory set pulse lagging in time and different from said received pulse in synchronism with said sending forth of ultrasonic pulse from said transmitter; (e) generating a decision signal by comparing said received pulse with said memory set pulse and determining a time difference between the two; (f) changing said time lag of the memory set pulse until said received pulse and said memory set pulse are brought



into agreement in accordance with said decision signal and memorizing the distance between said two members in terms of time lag of memory pulse; and (g) reading the distance between the two members until the received pulse and the memory set pulse are brought into agreement and reproducing the distance in the memorized position by reading the distance between said two members memorized by steps (a) to (f), comparing the received signal with the memory set pulse in accordance with a command signal, determining a time difference between the two and generating a decision signal.

4,375,901

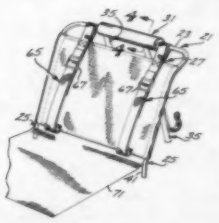
BEACH CHAIR

Christopher MacDonald, Costa Mesa, Calif., assignor to Designs Five, Inc., Costa Mesa, Calif.

Filed Jan. 9, 1981, Ser. No. 223,895

Int. Cl.³ A47C *21/00*

U.S. Cl. 297—377 **8 Claims**



1. A chair for use on a beach comprising:

a generally rectangular open bottom frame formed with a horizontal top run joined at its opposite extremities with oppositely disposed side legs projecting downwardly and defining at each of their lower extremities respective side stakes, said side stakes particularly characterized by an inclination of said side stakes with respect to said corresponding side legs so that when said beach chair is set up on said beach with said side legs inclined, said side stakes are generally vertical, thereby maximizing the holding power of said side stakes;

a strut rotatably connected on one extremity with said top run for rotating thereabout from a collapsed position in the plane of said side legs to support position angled outwardly therefrom and defining on its bottom extremity a strut stake;

web means connected on its opposite ends with said side legs to form a back rest; and,

a generally tubular headrest cushion telescoped over said top run whereby said strut may be rotated to said support position and said strut stake driven into the beach so a user may rest his back against said web means and his head against said headrest cushion.

4,375,902

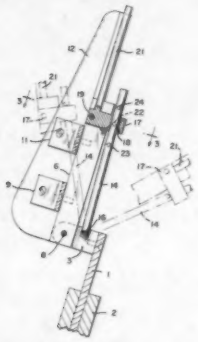
LOCKING HEADREST FOR DENTAL CHAIR

Harold Y. Tai, Everett, and Floyd E. Norris, Seattle, both of Wash., assignors to Royal Dental Manufacturing, Inc., Everett, Wash.

Continuation-in-part of Ser. No. 69,096, Aug. 23, 1979, abandoned. This application Sep. 29, 1980, Ser. No. 191,367

Int. Cl.³ A47C *7/10*

U.S. Cl. 297—408 **21 Claims**



1. A headrest for a chair, comprising:

support means for attaching said headrest to a chair;

a headrest frame pivotally connected to said support means;

a locking block pivotally connected to said headrest frame, said locking block having a bore extending therethrough;

a locking shaft having one end thereof pivotally connected to said support means and the other end thereof extending through said bore, said locking shaft having a diameter smaller than the diameter of said bore, said locking shaft being slidable within said bore when aligned therewith; and

means for engaging an edge of said locking of block adjacent said bore against the surface of said locking shaft to lock said locking shaft in a predetermined position within said bore.

4,375,903

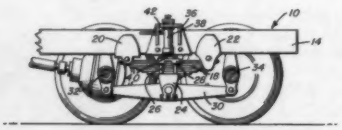
VEHICLE SUSPENSION SYSTEM AUGMENTER

Patrick A. Lovell, 245 S. Heber St., Beckley, W. Va. 25801

Filed Mar. 9, 1981, Ser. No. 241,675

Int. Cl.³ B60P *1/16*

U.S. Cl. 298—17 S **6 Claims**



1. In a vehicle including a frame, wheel and axle means, a suspension system including a plurality of resilient elements interconnecting said wheel and axle means and said frame, a dump body pivotally connected to said frame and movable between raised dumping and lowered transporting positions, a fluid pressure system carried by said vehicle and connected to said dump body to move said body between positions, the combination comprising a fluid pressure operated suspension augmenting device carried by one of and selectively operable between interconnected and disconnected positions between said frame and a portion of said suspension system to apply when interconnected a pressure force between said frame and said portion of said suspension system and change the relationship between at least one of said resilient elements and said frame.

4,375,904

LONGWALL MINERAL WINNING MACHINE WITH ADJUSTABLE CUTTING JET

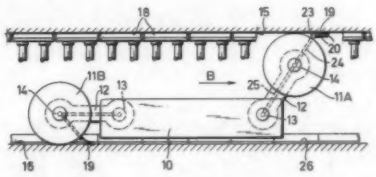
Klaus Beckmann, Lunen, and Kunibert Becker, Werl, both of Fed. Rep. of Germany, assignors to Gewerkschaft Eisenhütte Westfalia, Lunen, Fed. Rep. of Germany

Filed Jan. 27, 1981, Ser. No. 228,911

Claims priority, application Fed. Rep. of Germany, Feb. 7, 1980, 3004443

Int. Cl.³ E21C *25/60, 25/68*

U.S. Cl. 299—53 **13 Claims**



1. A mineral winning machine which employs a rotary cutting means and high-pressure fluid emitting nozzles which provide fluid jets to impinge on a mineral face to produce a preliminary slot in the mineral face, in advance of the cutting means wherein the nozzles are supported by a movable carrier which serves to position the nozzles at various height locations relative to the mineral face.

4,375,905

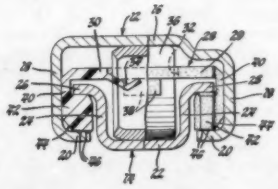
MANUALLY OPERATED BUCKET SEAT ADJUSTER

James R. Drouillard, Rochester, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 4, 1981, Ser. No. 318,133

Int. Cl.³ F16C *29/04*

U.S. Cl. 308—6 R **3 Claims**



1. In a seat slide including a pair of generally U-shaped track members, one including a base portion, a pair of laterally extending side edge portions and a terminal flange extending inwardly from each of the side edge portions, the other track member being encompassed within the one track member and including a base portion in opposed spaced relationship to the one base portion, a pair of side edge portions, each located in opposed spaced relationship to a respective side edge portion

of the one track member, and a terminal flange extending outwardly from each of the side edge portions and located in opposed spaced relationship to a respective terminal flange of the one track member, a bearing assembly for the track members comprising, a bearing unit of low friction plastic material including an apertured body portion received between the base portions of the track members, a roller received in the aperture of the body portion and rotatably engaging the opposed base portions of the track members to space the base portions and pairs of terminal flanges relative to each other and support the one track member on the other track member, means releasably interconnecting the roller and the body portion to permit preassembly of the roller with the bearing unit, an integral leg extending from the body portion intermediate each opposed pair of respective side edge portions and terminating in an integral bearing portion received between a pair of opposed respective terminal flanges to slidably support the one terminal flange on the other, each bearing portion including at least one deflectable rib engageable with a terminal flange of each pair to takeup variance in the spacing of the pairs of terminal flanges by the roller.

4,375,906

SYSTEM FOR SUPPORTING A ROTOR IN A CONDITIONS OF ACCIDENTAL DYNAMIC IMBALANCE

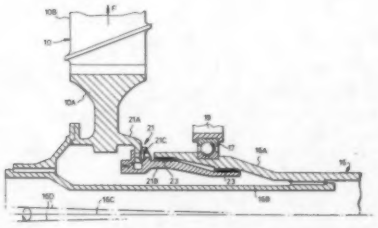
Derek A. Roberts, and John M. Treby, both of Bristol, England, assignors to Rolls-Royce Limited, London, England

Filed Jun. 10, 1981, Ser. No. 272,089

Claims priority, application United Kingdom, Jun. 27, 1980, 8021074

Int. Cl.³ F01D *5/02;* **F16C** *13/00*

U.S. Cl. 308—178 **5 Claims**



1. System for supporting a rotor in conditions of dynamic imbalance; comprising a fixed structure, a shaft having an annular first shaft part, a first bearing arranged between the first shaft part and said structure to support the first shaft part for rotation, the shaft further having a second shaft part extending within the annular first shaft part and connected to the first shaft part and to the rotor in torque-transmitting relation therebetween, the second shaft part being adapted to permit radial displacement of the rotor relative to the first shaft part, an axial extension provided on one of said rotor and first shaft part,

a second bearing arranged between said extension and the other one of said rotor and first shaft part to support the rotor on the first shaft part against said radial displacement, no rotation occurring between said extension and said first shaft part but the second bearing being adpated to accommodate relative thermal and oscillatory motion of the rotor and the first shaft part, overload-responsive means provided in said extension in a position axially between said first bearing and said rotor, and said overload-responsive means being adapted to break or deform under radial forces acting on the rotor, and thereby permit said radial displacement, when a given dynamic imbalance of the rotor is exceeded.

4,375,907

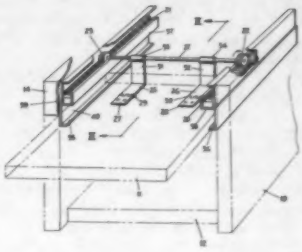
FLIPPER DOOR ASSEMBLY

David Vander Kooi, and Donald Flamboe, Jr., both of Holland, Mich., assignors to Trendway Corporation, Holland, Mich.

Filed Dec. 8, 1980, Ser. No. 213,991

Int. Cl.³ A47F *3/00;* **E05D** *15/56*

U.S. Cl. 312—109 **3 Claims**



1. A flipper door assembly for use on a cabinet or the like comprising:

a generally rectangular door sized to cover the desired cabinet opening;

a rack and pinion suspension mechanism for suspending said door which comprises a pair of gear racks mounted in said cabinet opening on either side thereof and perpendicular to and above the top of said door when in the closed position; and a pair of pinion gears above and engaging said gear racks and connected to each other by an axle shaft;

at least one hinge with one end of said hinge being generally flat and mounted to the upper inside surface of said door with the hinge pivot parallel to the top end of said door; the other end of said hinge being L-shaped with the outermost end being rotatably mounted on said axle shaft; and

a pair of guide channels for said door mounted in said cabinet below and parallel with said gear racks, whereby said door is opened from the closed vertical position by lifting the door to pivot it via said hinge pivot to the horizontal position in parallel alignment with said guide channels followed by pushing said door into said guide channels while said pinion gears traverse said gear racks until said door is contained within said cabinet.

4,375,908

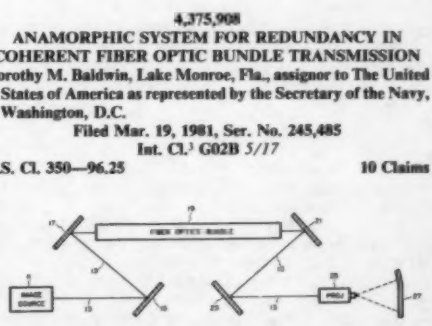
ANAMORPHIC SYSTEM FOR REDUNDANCY IN COHERENT FIBER OPTIC BUNDLE TRANSMISSION

Dorothy M. Baldwin, Lake Monroe, Fla., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 19, 1981, Ser. No. 245,485

Int. Cl.³ G02B *5/17*

U.S. Cl. 350—96.25 **10 Claims**



6. An optical transmission system comprising, in combination:

an image source having an optical output adapted for projecting an image forming light beam along a first predetermined optical path;

a first cylindrical shaped mirror spatially disposed down-

stream from the optical output of said image source along said first predetermined optical path;

a second cylindrical shaped mirror spatially disposed upstream from said first cylindrical shaped mirror along a second predetermined optical path having a predetermined angle with said first optical path;

a fiber optics bundle having a plurality of fiber rows, each fiber row of which has therein a plurality of fibers, an optical input, and an optical output, with the optical input of said fiber optics bundle spatially disposed downstream from said second cylindrical shaped mirror along a third predetermined optical path having a predetermined angle with said second optical path such that said third optical path is parallel to said first optical path;

a third cylindrical shaped mirror spatially disposed downstream from the optical output of said fiber optics bundle along said third optical path;

a fourth cylindrical shaped mirror spatially disposed upstream from said third cylindrical shaped mirror along a fourth predetermined optical path having a predetermined angle with said third optical path; and

a projector having a optical input and an optical output with the optical input thereof spatially disposed downstream from said fourth cylindrical shaped mirror along a fifth predetermined optical path having a predetermined angle with said fourth optical path such that said fifth optical path is parallel to said third optical path.

4,375,909
REAR PROJECTION SCREEN AND METHOD FOR THE PRODUCTION THEREOF

Cornelis Bos, Vossenschanslaan 54, 3445 Ec Woerden, Netherlands

Filed Oct. 3, 1980, Ser. No. 193,439

Claims priority, application Netherlands, Oct. 10, 1979, 7907509; Jul. 24, 1980, 8004273

Int. Cl.³ G03B *21/56*

U.S. Cl. 350—117 **8 Claims**

1. Rear projection screen comprising a light-scattering layer of a wax-like substance, characterized in that the light-scattering layer consists of a mixture of 95–5% by weight of paraffin having a low light-scattering power and 5–95% by weight of a wax-like substance having a high light-scattering power selected from the group consisting of white bees wax and microcrystalline paraffin.

5. A process for preparing a rear projection screen comprising a light-scattering layer of a wax-like substance, characterized by applying a melted mixture of 95–5% by weight of a paraffin having a low light-scattering power and 5–95% by weight of a wax-like substance having a high light-scattering power selected from the group consisting of white bees wax and microcrystalline paraffin to a transparent carrier or between two transparent carriers, and allowing the melted mixture to solidify.

4,375,910
OPTICAL ISOLATOR

Masafumi Seki, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

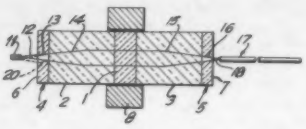
Filed Sep. 25, 1980, Ser. No. 190,805

Claims priority, application Japan, Sep. 25, 1979, 54-132419[U]

Int. Cl.³ G02F *1/09*

U.S. Cl. 350—375 **3 Claims**

1. An optical isolator comprising: a nonreciprocal polarization rotation element effective to rotate the plane of polarization of linearly-polarized collimated light beam approximately 45 degrees as the latter passes through said polarization rotation element in one direction; a pair of lens elements arranged on the opposite sides of said polarization rotation element so that said lens elements and said nonreciprocal polarization element are on a common optical path; and a pair of birefringent crystal plates effective to split a light beam incident thereon into two orthogonally polarized components and arranged on said common path and on the outer sides of said respective lens elements with the principal planes, each containing the normal to the associated birefringent crystal plate and the optic axis thereof, displaced approximately 45 degrees from each other.



4,375,911
COATING FOR EYEGLASSES

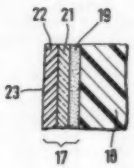
Walter H. Bononi, Zeppelinstrasse 9, 7012 Fellbach-Schmiden, Fed. Rep. of Germany

Filed Jun. 5, 1980, Ser. No. 156,867

Claims priority, application Fed. Rep. of Germany, Jun. 6, 1979, 7916275[U]

Int. Cl.³ G02C *5/14, 5/02*

U.S. Cl. 351—122 **5 Claims**



1. On the temple or the bridge connecting the lens bows of eyeglass frames, the improvement comprising an extremely thin, air-hardened, silicone elastomer coating at the inner surface of said temple or said bridge, at least in the area which contacts the wearer's skin, said silicone elastomer being a sprayed-on coating thin enough to be transparent to the surface of the frames beneath the coating and having a surface roughness similar to a fine wrinkle finish.

4,375,912
ELECTRIC CIRCUITS FOR USE IN CAMERA

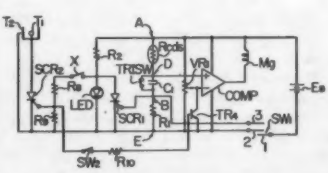
Akira Takahashi, Kawasaki, and Shinichiro Koshiishi, Hino, both of Japan, assignors to Ricoh Company, Ltd., Japan

Division of Ser. No. 6,225, Jan. 24, 1979, Pat. No. 4,305,648. This application May 23, 1980, Ser. No. 152,764

Claims priority, application Japan, Jan. 25, 1978, 53/7554; Jan. 25, 1978, 53/7555

Int. Cl.³ G03B *7/083, 17/18, 15/03*

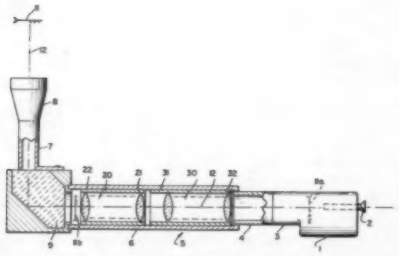
U.S. Cl. 354—33 **3 Claims**



1. An electric circuit for use with a camera comprising a shutter, said circuit comprising:

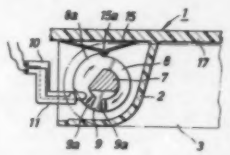
an electromagnet for controlling said shutter;
an integrating circuit comprising light responsive means, a condenser, and a resistor;
trigger switch means connected to said condenser to short-circuit the condenser under selective conditions and to allow a voltage to build up in said condenser during exposures;
actuating means connected to said integrating circuit to be controlled thereby, said actuating means being connected to said electromagnet to actuate said electromagnet when voltage across said condenser reaches a predetermined value;
a switching element operated by a signal from a current flowing through said resistor;
alarm means connected to said switching element to be controlled thereby;
terminals for synchronizing a flash source;
a thyristor comprising an output circuit connected in series with said terminals;
an X contact connected to said power supply means and connected to an input terminal of said thyristor;
said switching element comprising a second thyristor connected to said X contact and having an input terminal; and
circuit means connecting said light responsive means to said input terminal of said second thyristor to cause said second thyristor to be conductive when there is sufficient light to make it unnecessary to use a flash source, said second thyristor connecting said X contact to a source of potential to prevent said first thyristor from becoming conductive when said second thyristor is conductive.

4,375,913
SNORKEL SYSTEM
Stephen Hajnal, 5600 Riverdale Ave., Bronx, N.Y. 10471
Filed Oct. 26, 1981, Ser. No. 314,590
Int. Cl.³ G03B *17/48*
U.S. Cl. 354—79 **7 Claims**



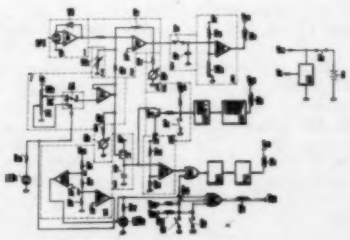
1. A snorkel camera system comprising a 35 mm format or videotape camera body means having a camera housing with a light admitting opening therein, means for recording images transmitted through said light admitting opening, and an eyepiece having a lens therein for viewing the object being photographed; an elongated hollow housing means having one end arranged for light entry and the other end for light egress, the light-egress end of said housing means being detachably secured to said camera body means at said light admitting opening; an 8 mm format camera lens means detachably secured to the light-entry end of said housing means; and optical means for providing an optical path from said 8 mm format camera lens means through said hollow housing means to and through the light admitting opening of said camera body means; said optical means comprising a prism means in said housing means adjacent said light entry end and having a first face disposed toward said camera lens means and a second face perpendicular to said first face and disposed toward said camera body means, first and second 35 mm format lenses in said housing means between said prism means and said light egress end, said first and second lenses having their front ends facing one another, said first lens having a focal length of 58 mm and being adjacent said prism means and said second lens having a focal length of 200 mm and being between said first lens and said light egress end, said prism means being operable to erect and reverse the image transmitted by said 8 mm format camera lens means through said first face and to transmit said erected non-reversed image to said first and second lenses through said second face, whereby an erect non-reversed image of the object is viewed through said eyepiece.

4,375,914
BATTERY POWERED CAMERA
Gary E. Miller, Tokyo, and Iwao Hasegawa, Setagaya, both of Japan, assignors to Osawa Precision Industries, Ltd., Japan
Filed Aug. 31, 1981, Ser. No. 298,000
Claims priority, application Japan, Sep. 3, 1980, 55-124481[U]; Sep. 5, 1980, 55-125585[U]
Int. Cl.³ G03B *17/18, 17/00*
U.S. Cl. 354—82 **7 Claims**



1. A battery powered camera having a battery therein for camera operation comprising a camera body in which said battery is replaceably installed, a collapsible handgrip pivotally mounted on said camera body and movable between an inoperative position in which said handgrip is folded and an operational position in which said handgrip is extended from said camera body to operate said camera, a main power switch for turning said battery on for camera operation, and a battery checker for checking battery capacity and signalling when said battery drops in capacity to a predetermined level, said battery checker being operable only during a short period of time in which said handgrip is being moved to said closed or extended position.

4,375,915
SHUTTER TIME CONTROL CAMERA
Masanori Uchidoi, Yokohama, and Kazunobu Urushihara, Inagi, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 230,119, Jan. 29, 1981, abandoned. This application Jan. 6, 1982, Ser. No. 337,469
Claims priority, application Japan, Feb. 4, 1980, 55-12250
Int. Cl.³ G03B *9/62*
U.S. Cl. 354—234 **9 Claims**



1. A camera comprising:

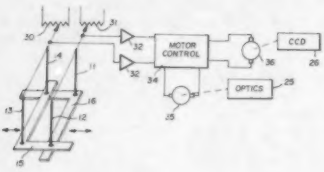
(a) a power supply circuit for supplying a voltage;
(b) movable shutter means for providing a camera shutter time and being arranged to be fully open when the shutter time exceeds a certain value;
(c) driving means for producing a driving force to drive the shutter means in response to said voltage from the power supply circuit, said driving means driving said shutter means to move at a constant normal speed when said voltage is above a predetermined value;
(d) a detecting circuit for detecting the voltage, said detecting circuit producing a signal when said voltage corresponds to said predetermined value;
(e) shutter time signal forming means for forming a shutter time signal; and
(f) a shutter control circuit coupled to said driving means for controlling the shutter time and being arranged to have a first mode for controlling the shutter time in accordance with the shutter time signal and a second mode for providing a shutter time longer than a certain value above which the shutter means is fully open said controlling circuit being operative in the second mode in response to the signal from the detecting circuit.

4,375,916

PHOTOCOPIER SYSTEM WITH PORTABLE DETACHABLE READER

Alfred B. Levine, P.O. Box 2763 (EADS), Arlington, Va. 22202

Continuation-in-part of Ser. No. 925,290, Jul. 17, 1978, Pat. No. 4,251,153, which is a continuation-in-part of Ser. No. 775,480, Mar. 8, 1977, abandoned, Ser. No. 718,260, Aug. 27, 1976, Pat. No. 4,182,568, and Ser. No. 39,107, May 15, 1979, Pat. No. 4,236,813. This application Feb. 13, 1981, Ser. No. 234,252
Int. Cl.³ G03G *15/00*
U.S. Cl. 355—5 **12 Claims**



10. A portable detachable image reader for a photocopy machine including an optical-electrical sensor for producing a video image, a light source, a memory for "temporarily" retaining the video image, adjustable framing means for defining the area of the image to be copied, an adjustable optical system for focusing optical images of different size on the sensor, and means coupling the adjustable framing means to the adjustable optical system for automatically focusing images of different size.

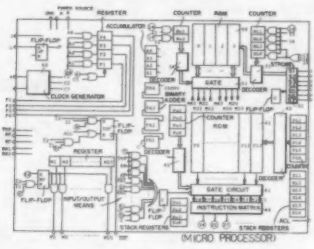
4,375,917

SINGLE-CHIP, MOS-LSI MICROPROCESSOR CONTROLLED ELECTROPHOTOGRAPHIC COPYING MACHINE

Shizuka Hiraike, Yamatokoriyama; Yukihiro Yoshida, Ikoma; Shintaro Hashimoto, Nara; Mitsuo Tada, Nara, and Toshio Yamagishi, Nara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 794,140, May 21, 1977, abandoned. This application May 21, 1979, Ser. No. 40,535
Claims priority, application Japan, May 6, 1976, 51-52391
Int. Cl.³ G03G *15/00*
U.S. Cl. 355—14 R **6 Claims**

1. An electrophotographic copying machine comprising:
a rotatable drum on which a transferable image corresponding to an original image to be copied is formed;
master paper secured around said rotatable drum;
means for providing a uniform charge to the surface of said master paper;
light exposure station means for applying a latent image to the surface of the charged master paper thereby forming an electrostatic light image thereon;
developing station means for converting said electrostatic latent image on said master paper to a visible toner image by the application of a toner thereto;
means for feeding a copy receiving paper from an inlet means into a close contact position relative to said master paper bearing said visible toner image thereon;
means for transferring said visible toner image from said master paper to said copy receiving paper;
means for removing said copy receiving paper from said master paper after the transference of said visible toner image from said master paper to said copy receiving paper and for transporting said copy receiving paper to another position of said electrophotographic copying machine;
fixing station means downstream from said means for removing for accepting said copy receiving paper from said means for transporting and for firmly fixing said visible toner image onto said copy receiving paper by the application of heat thereto, said heat being provided by a heat source means;
roller means for advancing said copy receiving paper from said fixing station means to an outlet means;
control system means for controlling the operation of said



electrophotographic copying machine as said copy receiving paper moves from said inlet means to said outlet means;
wherein said control system means comprises a predetermined number of sensing element means, each of said sensing element means developing an output signal indicative of a respective operating state of one of a plurality of operating elements of said copying machine;
drum signal generating means responsive to rotation of said rotatable drum for developing synchronizing signal indicative of the rotation of said rotatable drum and developed in synchronism in response to the rotation of said rotatable drum;
temperature control circuit means for controlling the temperature of said heat source means at said fixing station means, said temperature control circuit means generating a temperature controlling signal when the temperature of said heat source means reaches a desired temperature;
roller sensor means for sensing whether said roller means in jammed, said roller sensor means generating a roller sensor signal when said roller means is jammed;
power-on signal source means for generating a power-on signal indicative of the initiation of power to said electrophotographic copying machine.
microprocessor means responsive to said synchronizing signals, said temperature controlling signal, said roller sensor signal, and said power-on signal for generating control signals in accordance with said synchronizing signal, said temperature controlling signal, said roller

signal, and said power-on signal, said microprocessor means including a ROM for storing a group or instructions, said microprocessor means utilizing said instructions to control the operating states of said plurality of operating elements of said electrophotographic copying machine by said generated signals in response to said output signals from said sensing element means;

means for generating strobe signals for interrogating a confirmation circuit means which generates signals for determining whether or not there are one or more output signals generated from said sensing element means, said strobe signals retrieving said instructions from said ROM;

means for terminating the generation of said strobe signals when said confirmation circuit means determines that there are no said output signals from said sensing element means; and

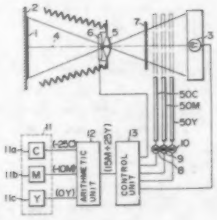
means responsive to an output signal from said confirmation circuit means for constraining said means for generating strobe signals to generate said set of strobe signals a predetermined number of times in succession, when said confirmation circuit means determines that there are one or more sensing element means output signals.

4,375,918

COLOR CORRECTION APPARATUS FOR A DUPLICATE CAMERA

Koichi Isono, Hikone, and Tsuneo Takagi, Kurita, both of Japan, assignors to Dainippon Screen Seizo Kabushiki Kaisha, Japan

Filed Aug. 31, 1981, Ser. No. 298,342
Claims priority, application Japan, Sep. 29, 1980, 55-135486
Int. Cl.³ G03B *27/73*
U.S. Cl. 355—35 **4 Claims**



1. A color correction apparatus for a duplicate camera wherein three color correction filters of three primary colors are provided and are selectively interposed into the exposure light path, comprising:

(a) color correction value setup means which sets up color correction values of colors to be removed from the tone of an original picture;

(b) an arithmetic unit which is connected to the color correction value setup means and which inputs the density values set up in the color correction value setup means as negative values and subtracts the minimum value of the density values input from each of the other density values to output a color correction signal corresponding to the differences subtracted of the density values; and

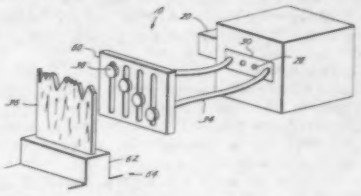
(c) a control unit which is connected to the arithmetic unit and which controls the color correction filters so that they may be interposed into the exposure light path according to the color correction signal.

4,375,919

MULTIPLE ENTRANCE APERTURE DISPERSIVE OPTICAL SPECTROMETER

Kenneth W. Busch, Waco, Tex., assignor to Baylor University, Waco, Tex.

Continuation of Ser. No. 33,235, Apr. 25, 1979, abandoned. This application Oct. 7, 1980, Ser. No. 195,210
Int. Cl.³ G01J *3/18, 3/28*
U.S. Cl. 356—326 **7 Claims**



1. In a multiple entrance spectrometer having light detector means, dispersion means for separating light radiation into spectral components and directing said spectral components toward the light detector means, means for admitting light radiation into an entrance focal plane and for directing said light radiation toward said dispersion means, said light radiation admitting means including a plurality of spaced apart apertures, the improvement for providing simultaneous multielement analysis by atomic spectroscopy comprising,

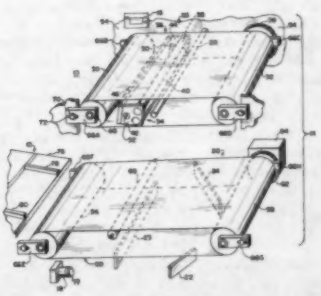
a plurality of fiber optic light guides, each of which transmits light radiation from a light source to one of the apertures, said guides having an input end adapted to be positioned adjacent the light source, and said guides having an exit end connected to one of the apertures, said exit ends selectively connected to the apertures for repositioning the exit ends at desired locations in the entrance focal plane for avoiding spectral interferences or regions of intense background on the detector.

4,375,920

AREA METER

John H. Wurm; Lyle R. Middendorf, and William W. Biggs, all of Lincoln, Nebr., assignors to Li-Cor, Inc., Lincoln, Nebr.

Filed Jul. 31, 1978, Ser. No. 929,277
Int. Cl.³ G01B *11/28, 11/04;* **B65G** *15/14, 23/44*
U.S. Cl. 356—380 **20 Claims**



1. Apparatus comprising:

measuring means for generating a plurality of area pulses related to the area of an object to be measured;

conveyor means for moving the object to be measured and the measuring means with respect to each other;

said measuring means including sensing means for generating a plurality of dimension pulses proportional to at least one dimension of said object to be measured and focusing means for focusing an image of at least a portion of said object to be measured onto the sensing means;

said focusing means including replaceable means for focusing different sizes of said portions of said object across a predetermined length of said sensing means;

said measuring means further including counting means for counting said pulses, whereby said counted pulses provide an indication of said area of said object;

said counting means including means for dividing said count by a predetermined number, whereby said area of said object is accurately represented even though said image is changed in size;

said conveyor means for moving the object and measuring means with respect to each other includes a conveyor and means for moving said conveyor;

said means for moving said conveyor includes a synchronous motor and alternating current means for applying power to said synchronous motor;

said measuring means includes pulse means for generating basic-timing pulses proportional to the rate at which said object is moved with respect to said measuring means; and

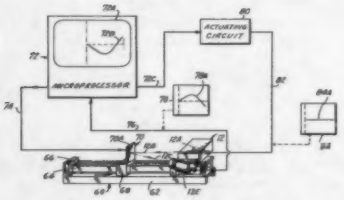
said pulse means includes phase locked loop means for generating basic-timing pulses in synchronism with said alternating current from said alternating current means.

4,375,921

DIMENSION MEASURING APPARATUS

Karl-Erik Morander, Lerum, Sweden, assignor to Selective Electronic Co. AB, Partille, Sweden

Filed Mar. 13, 1980, Ser. No. 130,171
Int. Cl.³ G01B 11/06; G01V 1/02; G01D 18/00
U.S. Cl. 356—381 8 Claims



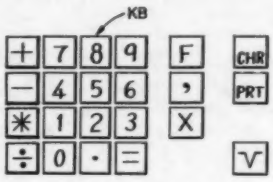
1. Apparatus for measuring a dimension associated with a remote object having at least one reflective surface comprising in combination a source of controllable light directed at said surface at a first predetermined angle to generate a corresponding reflected light signal, detection means for receiving and measuring said reflected light signal at a second predetermined angle, means for developing a transmittable signal based on said reflected light signal for readout of said dimension, correction means for adjusting said transmittable signal to eliminate non-linear errors attributable at least to the lack of perpendicularity between said first and second predetermined angles, and output means for processing said adjusted transmittable signal to generate an output display signal corresponding to said dimension of said remote object, wherein said dimension represents the distance between a predetermined point and said reflective surface of said object, and wherein said correction means includes pre-calibrated control means for developing a group of linearizing signals dependent on at least said lack of perpendicularity and on the material comprising said object to adjust said transmittable signal in accordance with a comparison of said transmittable signal and a selected one of said linearizing signals, wherein said pre-calibrated control means includes a programmable memory unit for receiving periodically generated correction signals during a separate calibration cycle, wherein said correction means further includes guiding means for providing a fixed transport path, means movable along said guiding means for establishing a positionally controllable detecting surface, means mounted on said guiding means for generating calibration signals comparable to said controllable light source signal and said reflected light signal, means for determining the non-linear departure of said calibration signals corresponding to said reflected light signal, means for effectively cancelling said non-linear departure in said calibration signals corresponding to said reflected light signal and for delivering said correction signals to said memory unit, and control means included in said movable means for monitoring the movement of said detecting surface at discrete detectable positions along said transport path and for causing said correction signals to be generated and communicated to said memory unit for each of said discrete detectable position on said guiding means.

4,375,922

CHARACTER PRINTING SYSTEM IN ELECTRONIC DATA PROCESSING APPARATUS SUCH AS ELECTRONIC CALCULATORS

Toshiyuki Maegawa, Higashiosaka; Yukihiro Yoshida, Ikoma; Satoshi Tominaga, Yamatokoriyama, and Toru Izaki, Nara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 831,400, Sep. 8, 1977, abandoned. This application Jul. 2, 1980, Ser. No. 165,339
Claims priority, application Japan, Sep. 16, 1976, 51-111380
Int. Cl.³ B41J 5/30
U.S. Cl. 400—70 10 Claims



1. A combined electronic data processor and calculator including a character printing system for printing language character data generated in accordance with a set of numerical value key code data in a language printing mode, said language character data being represented by said set of numerical value key code data in accordance with a predetermined convention, said system comprising:

numerical value keying input means for entering selected numerical value key code data into said character printing system when in a numerical printing mode, said set of numerical value key code data including a combination of said numerical value key code data in accordance with said predetermined convention, said numerical value keying input means further entering numerical data for selective presentation to said calculator;

storage means responsive to said numerical value key code data introduced by said numerical value keying input means for sequentially storing said numerical value key code data therein, said storage means including memory means responsive to the numerical value keying input means for storing said numerical value key code data therein, said memory means developing an output signal indicative of said numerical value key code data;

function keying input means for entering selected function key code data representative of one of said printing modes into said character printing system, the numerical value key code data signal developed by said memory means in addition to said selected function key code data indicative of a selected printing mode identifying the language char-

acters to be printed, said function keying input means including,

a language kind specifying key;

language bistable latch means operatively connected to said language kind specifying key, said language bistable latch means alternating between first and second states of function key code data by repeated actuation of said language kind specifying key, said first and second states being indicative of first and second particular languages of said language characters undergoing printing;

converting means responsive to said selected function key code data and to the set of numerical value key code data for converting said numerical value key code data into said language character data of a predetermined language in accordance with said selected function key code data entered via said function keying input means;

character generating means responsive to said language character data generated by said converting means for generating said language characters to be printed in accordance with said language character data, the language characters being printed in the language determined by the language kind specifying key;

said calculator receiving said numerical data from said numerical value keying input means and performing desired calculations thereon to produce calculated results;

and

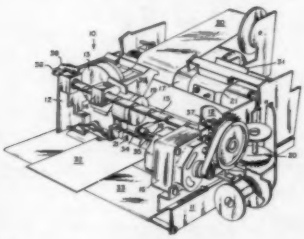
printing means for printing said language characters and said calculated results.

4,375,923

ROTATABLE PRINT HEAD FOR A MULTIPLE PRINT STATION PRINTING APPARATUS

Kenjiro Hidaka, Los Angeles, Calif., and Nicholas Kondur, Jr., Westminster, Colo., assignors to C. Itoh Electronics, Inc., Los Angeles, Calif.

Filed Nov. 5, 1980, Ser. No. 199,118
Int. Cl.³ B41J *3/54*
U.S. Cl. 400—82 **3 Claims**



1. A rotatable print head in combination with a multiple print station printing apparatus comprising:

a. a print head;

b. a movable carrier to which said print head is pivotally coupled so that said print head may rotate substantially an angle of 90°;

c. a frame;

d. first driving means for bi-directionally and laterally moving said movable carrier in a direction which is parallel to the axis of rotation of said print head;

e. a first platen which is rigidly coupled to said frame and the print surface of which is disposed in a first plane which is substantially vertical and parallel to the axis of rotation of said print head; and

f. a second platen which is rigidly coupled to said frame and the print surface of which is disposed in a second plane which is substantially horizontal and parallel to the axis of rotation of said print head;

g. an axial rod fixedly coupled to said print head and pivotally coupled to said movable carrier with said axial rod being aligned with the center of gravity of said print head; and

h. rotating means for rotating said axial rod in order to rotate said print head mechanically coupled to said movable carrier;

i. first latching means for latching said print head in its printing alignment with said first platen;

j. second latching means for latching said print head in its printing alignment with said second platen;

k. first impacting means for impacting said print head so that said print head is pushed free from said first latching means; and

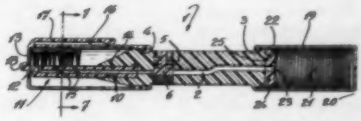
l. second impacting means for impacting said print head so that said print head is pushed free from said second latching means whereby said print head may rotate independently of said first driving means into printing alignment with either said first platen or said second platen.

4,375,924

PASTE DISPENSER TOOTH-BRUSH

Paul-Emile Lemire, 59-2nd Ave., P.O. Box 823, Forestville, Quebec, Canada G0T 1E0

Filed Aug. 13, 1981, Ser. No. 292,613
Int. Cl.³ A46B *11/02*
U.S. Cl. 401—173 **1 Claim**

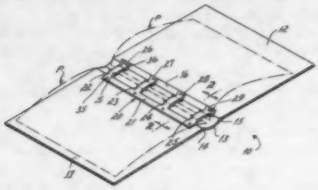


1. A paste dispenser tooth-brush comprising, in combination, an intermediate body with a tooth-paste passage therein, a tooth-brush head secured to one end of the intermediate body and including a tooth-brush with an intermediate passage and with paste outlet means in operative communication with the tooth-paste passage of the intermediate body, the other end of said intermediate body forming an integral piston having external screw threads, the tooth-paste passage of said intermediate body opening at the external end face of said piston, at least two spaced projections protruding from said end face of said piston, a tooth-paste supply cartridge having an open end and a closed opposite end, and having an internal surface forming internal screw threads extending substantially through the entire length of said cartridge, a rigid cap having external screw threads, a tooth-paste passage extending therethrough and spaced cavities at one end face, the external screw threads of said piston and cap engageable with the internal screw threads of said cartridge, said spaced cavities adapted to receive the projections of said piston with the tooth-paste passage of said cap in communication with the tooth-paste passage of said intermediate body, said cap closing the open end of said cartridge when the latter is filled with tooth-paste, a pull-off sticker closing the tooth-paste passage of said cap, removal of the latter enabling said piston to be inserted into the open end of said cartridge in threaded engagement with the internal threads thereof and with the projections of said piston engaging the cavities of said cap with the tooth-paste passage of said intermediate body in register with the tooth-paste passage of said cap and in communication with the supply of tooth-paste in said cartridge, relative rotation of said cartridge and of the assembly of said piston and of said cap in one direction causing expelling of the tooth-paste within said cartridge through said tooth-paste passages, and once the tooth-paste supply in said cartridge is spent, said cartridge can be detached from said piston by relative rotation of said cartridge with respect to the assembly of said piston and cap in the opposite direction.

4,375,925
BOOK BINDING

Hugo Grummich, 532 Wellesley Dr., Cincinnati, Ohio 45224

Filed Dec. 22, 1980, Ser. No. 218,840
Int. Cl.³ B42F 13/06
U.S. Cl. 402—15 6 Claims



1. In a book having a flexible spine joining front and back covers and pages having elongated apertures proximate edges thereof for binding within the book, flexible binding apparatus comprising:

an integral flexible binding member having an elongated base strip and a plurality of flexible page holding fingers integral with the base strip and extending perpendicularly therefrom;

means in said base strip proximate respective fingers for connecting said base strip to one cover of said book;

means proximate loose ends of said fingers opposite said base strip for connecting said fingers to another cover of said book across said spine;

said fingers extending through said page apertures binding said pages between said covers;

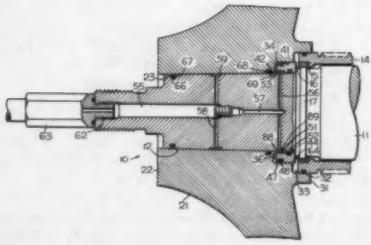
said binding member being made of flexible plastic material and each of said fingers of said binding member from adjacent said base strip and toward said loose ends of the fingers defining a flexible page holding portion of constant dimension, said base strip and said loose ends being connected to said respective covers, outwardly of said page holding portion; and

said page holding portions bending with said spine when said book is closed and bending away from said spine when said book is opened.

4,375,926
DEVICE FOR REMOVING COMPONENTS FROM SHAFTS

Thomas R. Feller, Milwaukee, Wis., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Jul. 27, 1981, Ser. No. 287,105
Int. Cl.³ F16D 1/00; F16L 17/00, 29/00
U.S. Cl. 403—15 11 Claims



1. A tightly fitted assembly, comprising:

a shaft member having a free end portion provided with an axially extending tapered surface;

a second member having a mounting hub provided with a tapered internal bore complimentary to the tapered surface of said shaft member and mounted on said shaft member with an interference fit therebetween;

an axially extending fluid supply passage in said shaft member adapted to be connected in communication with a source of pressurized fluid;

a first radially extending fluid passage in said shaft member providing fluid communication between said supply passage and the periphery of said tapered surface;

stop means on said shaft member;

axially extending piston cylinder means formed in said second member;

piston means axially abutting said stop means reciprocably mounted within said piston cylinder means to form a fluid chamber therewithin; and

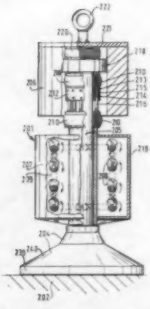
a second radially extending fluid passage in said shaft member providing fluid communication between said supply passage and said chamber; whereby

upon predetermined fluid pressurization of said passages, fluid pressure in said first passage acts to expand the bore in said second member to reduce the interference fit between said members while fluid pressure in said second passage and said chamber acts to urge said second member axially away from the tapered surface of said shaft member.

4,375,927
METHOD AND DEVICE FOR INTERMITTENTLY EXERTING FORCES ON SOIL

Joris Kniep, Oudenbosch, Netherlands, assignor to International Technische Handelsonderneming en Adviesbureau Itha B.V., Oudenbosch, Netherlands

Filed Dec. 18, 1979, Ser. No. 104,978
Claims priority, application Netherlands, Dec. 20, 1978, 7812372
Int. Cl.³ E01C 19/38
U.S. Cl. 404—133 23 Claims



23. A device for intermittently exerting thrusting forces on soil, comprising transmission means for transmitting the forces to the soil and including a base member, a column mounted on said base member, a mass exerting a mass load on said transmission means, at least one vibratory member which is adapted to move up and down and to be brought successively out of and, in a shock-like manner, into engagement with the transmission means, with no buffering means opposing the shock-like engagement between said at least one vibratory member and said transmission means, a column mounted on said base member, said at least one vibratory member including a housing surrounding said column, the latter of which forms a guiding member for said housing, and a plurality of eccentrically rotatable masses accommodated in the housing, and the housing having a lower end adapted to be brought successively out of and, in a shock-like manner, into engagement with the base member, an abutment provided at the upper end of said column and used for take-off of the at least one vibratory member in a

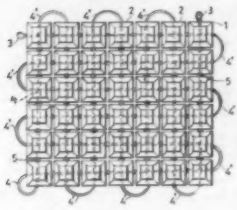
downward direction, said abutment including a collar secured to the column, and at least one rubber ring and at least two equiangularly spaced hydraulic rams provided around the column, said at least one ring and said rams forming a connection between the at least one vibratory member and said collar.

4,375,928

FLEXIBLE CONCRETE FOR SOIL EROSION PREVENTION

Robert Q. Crow, and David H. Hansen, both of Ridgetown, Ontario, Canada N0P 2C0

Filed Aug. 14, 1980, Ser. No. 177,849
Int. Cl.³ E02B *3/12*
U.S. Cl. 405—20 **1 Claim**



1. A device for the prevention of soil erosion caused by the action of flowing waters, wave action, heavy rains, and floods, comprising, in combination, flexible rectangular concrete sections for covering said soil; said sections consisting of parallel rows of spaced, identical rows of concrete blocks; each of said blocks having the shape of a truncated pyramid having a rectangular base, and a flat top which is parallel to said base; said blocks being fastened to each other by means of a continuous cable made of plastic or a non-corrosive metal which passes through the centers of each block and is embedded therein; said cable providing a small loop at the exit and entrance of each section, for the purpose of handling the said sections by means of hooks or hoists during transportation and installation, and forming a somewhat larger loop as the cable leaves one row of blocks to enter its next adjacent row; and thin concrete bonds between blocks covering the open cable in spaces between said blocks, to provide sufficient rigidity to each of said sections for easy handling during installation, but said concrete bonds being easily broken to provide the required flexibility fo fit and cover the contour of the soil, manually.

4,375,929

PROTECTIVE FLOOD BARRIER

Travis B. Clark, P.O. Box 218, Walker, La. 70785

Filed Sep. 2, 1980, Ser. No. 183,440
Int. Cl.³ E02B *7/02*; E02D *31/00*
U.S. Cl. 405—114 **10 Claims**

1. A protective flood barrier to protect a building from flood waters which comprises:

(a) a continuous, water-tight, foundation positioned in close proximity to said building;

(b) rigid panal members sealingly attachable to their lower end to said foundation with sealing material between said panel members and said foundation, and with said panel members being abuttingly positioned at their vertical edges adjacent one another;

(c) sealingly assemblies comprising:

(i) first and second gasket strips positionable across and on opposite sides of said abutting vertical edges,

(ii) first and second plates positionable across and exteriorly of said first and second gasket strips, respectively, said plates and gasket strips sealingly attachable to said abutting adjacent panels by attaching means; and,

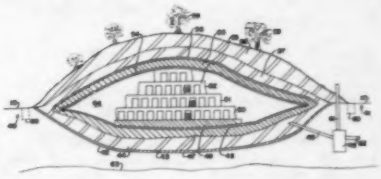
(d) support means attachable to said panels and having an arm member abutting against said building.

4,375,930

PERMANENT DISPOSAL VAULT FOR CONTAINERS

Richard E. Valiga, Center Square, Pa., assignor to Stabatrol Corp., Norristown, Pa.

Filed Dec. 3, 1980, Ser. No. 212,792
Int. Cl.³ E02D *29/00*
U.S. Cl. 405—128 **5 Claims**



1. A method for encapsulating containers which comprises:

(1) establishing a base surface;

(2) depositing said containers on said base surface apart from one another;

(3) establishing wall forms around a preponderance of the perimeter of deposited containers;

(4) applying a cementitious substance within said wall forms to the said base surface to fill the space between said deposited containers and covering said deposited containers;

(5) leveling the top of said cementitious substance within said wall frames to form a cover slab at least two inches thick above said deposited containers and to form a second tier base surface;

(6) hardening said cementitious substance to form a monolithic block including the said cover slab and the said space between said deposited containers.

4,375,931

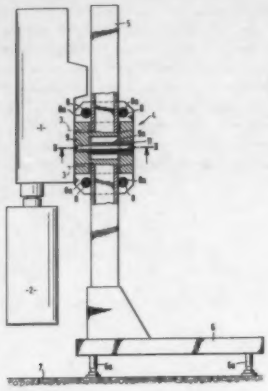
STAND FOR SUPPORTING A DRILLING TOOL

Wolfgang Erdt, Munich, Fed. Rep. of Germany, assignor to Hilti Aktiengesellschaft, Schaan, Liechtenstein

Filed Nov. 5, 1980, Ser. No. 204,193
Claims priority, application Fed. Rep. of Germany, Nov. 7, 1979, 2944966
Int. Cl.³ B23B *39/00*
U.S. Cl. 408—234 **3 Claims**

1. Stand for supporting a drilling tool comprising an elongated guide column, a guide block mounted on said guide column for movement in the elongated direction thereof, rollers rotatably supported in said guide block and in contact with said guide column for movably displacing said guide block along said guide column, means for elastically maintaining contact between said rollers and said guide column, said means for elastically maintaining contact comprises an elastic sleeve-like jacket laterally encircling and closely fitted on at least certain of said rollers so that said jacket bears in rotating

contact with the surface of said guide column, thereby permitting a flexible adjustment of the rollers in said guide block to



the surfaces of said guide column along which said rollers move.

4,375,932

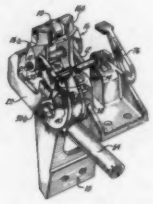
POWERED CARGO RESTRAINT

John Alberti, Seattle, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed May 7, 1981, Ser. No. 261,677

Int. Cl.³ B60P *7/08;* **B61D** *45/00;* **B63B** *25/22*

U.S. Cl. 410—69 **11 Claims**



1. A cargo restraint comprising:

a base;

a carrier member pivotally attached at a first end thereof to said base;

a lip member rotatably mounted on a second end of said carrier member, said lip member being movable between a cargo-engaging position and a retracted position;

stop means associated with said carrier member and said lip member for establishing an upstanding limit position of said lip member and preventing rotation of said lip member in a first direction;

biasing means for biasing said lip member into said upstanding limit position;

toggle linkage means mounted on said base and cooperative with said carrier member to prevent pivotal movement of said carrier member and to maintain said lip member in said cargo-engaging position, said toggle linkage means including a first toggle link pivotally attached at a first end thereof to said lip member, a second toggle link pivotally attached at a first end thereof to said base, a second end of said second toggle link being pivotally attached to a second end of said first toggle link at a common pivot point, said first and second links having an overcenter position in which said links cooperate to resist rotation of said carrier member;

retraction means cooperably associated with said toggle linkage means and operable to release said toggle linkage means and to move said lip member to said retracted position, said retraction means including a retraction link abutting said toggle linkage means adjacent said common pivot point, said retraction link actuatable to push said first and second toggle links out of their overcenter position and to move said carrier member to place said lip member into said retracted position; and

control means associated with said retraction means and located remotely from said cargo restraint, said control means being operable to cause said retraction means to release said toggle linkage means.

4,375,933

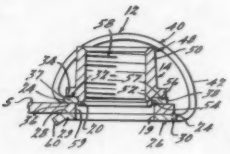
CLIP NUT

Donald H. Hassler, Fullerton, and Paul V. Pagel, Ontario, both of Calif., assignors to Microdot Inc., Darien, Conn.

Filed Aug. 18, 1980, Ser. No. 178,769

Int. Cl.³ F16B *37/04*

U.S. Cl. 411—112 **5 Claims**



1. A clip nut assembly for use with thin sheet material, said assembly comprising a substantially planar first clamping portion, a substantially planar second clamping portion spaced from said first clamping portion and extending substantially parallel thereto, a nut fixedly secured to said second clamping portion, said nut including a threaded bore for receiving a complementary threaded bolt, the axis of said bore extending substantially normally of said second clamping portion, and a biasing portion comprising a pair of spaced arcuate members of substantially constant radius for biasing said second clamping portion toward said first clamping portion to enable said first and second clamping portions to clampingly engage a piece of sheet material inserted therebetween, said biasing portion enabling said second clamping portion to pivot about a first axis for positive angular deflection of said second clamping portion relative to said first clamping portion to accommodate the thickness of said sheet material during initial insertion thereof between said first and second clamping portions, and to pivot about a second axis extending substantially parallel to said first axis for negative angular deflection of said second clamping portion relative to said first clamping portion and into parallel alignment with said first clamping portion and said sheet material so that the axis of said bore of said nut extends substantially normally of said first and second clamping portions and said sheet material upon complete insertion of said sheet material between said clamping portions.

4,375,934

LIFTING AND POSITIONING APPARATUS FOR CONSTRUCTION PANELS

Louis T. Elliott, Rte. 1, Rimini, S.C. 29131

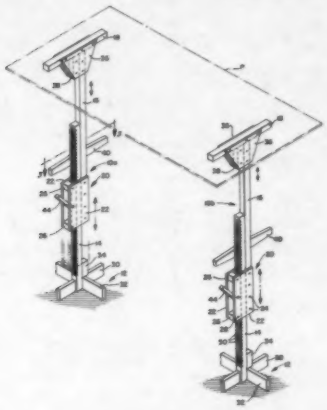
Filed Oct. 8, 1980, Ser. No. 195,256

Int. Cl.³ E04G *21/14*

U.S. Cl. 414—11 **9 Claims**

1. Apparatus for lifting and positioning construction panels such as sheet rock, such apparatus comprising: a pair of independent lifting standards, each standard including a base, a

fixed strut supported from said base to be retained in a generally vertical orientation, a movable strut, a panel supporting rail secured at the top of said movable strut in transverse relationship thereto, guide frame means secured to the movable strut for retaining said movable strut in sliding relation adjacent to and generally parallel with said fixed strut, a lifting handle fixedly secured to said movable strut, one-way latch means carried by said guide frame means and operative normally to prevent downward movement of said movable strut relative to said fixed strut, said latch means being releasable to



enable such downward movement and providing for unrestricted upward movement of said movable strut relative to said fixed strut, a lower abutment block supported by said base to underlie said movable strut, and an upper abutment block secured near the upper end of said movable strut to overlie said fixed strut, the length of both said struts being established so that said upper abutment block rests on the top of said fixed strut and the bottom of said movable strut rests on said lower abutment block when said movable strut is in its lowermost position.

4,375,935

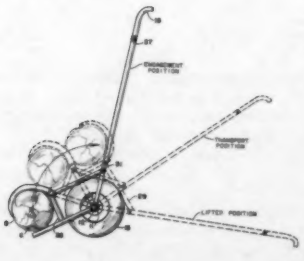
LIFTING AND TRANSPORTING APPARATUS

David Miller, Rte. #1, Box 139, Knox, Ind. 46534

Filed Jul. 7, 1981, Ser. No. 281,058

Int. Cl.³ B65G 7/12

U.S. Cl. 414—454 **6 Claims**



1. An improved hand truck for moving cargo objects comprising:

(a) elongated handle means having an upper extremity adapted to be grasped for manipulative purposes, and a lower extremity,

(b) a pair of wheels of equal diameter,

(c) an axle connecting said wheels,

(d) said handle means being pivotably associated adjacent its lower extremity with said axle,

(e) a frame comprised of a pair of lifting extensions having forward and rearward extremities and a fork mounted to said lifting extensions in spanning relationship therewith and extending thereabove, said fork comprising two upright members and a transverse member which fixes the spacing between said upright members, and an abutment surface against which said cargo object rests,

(f) the rearward extremities of said lifting extensions being pivotably supported by said axle,

(g) securing means having a forward extremity, a rearward extremity pivotably supported by said fork, and a curved underside having a downwardly concave configuration,

(h) a lever arm having a forward and a rearward extremity,

(i) the forward extremity of said lever arm being pivotably engaged with said securing means at a site displaced more rearwardly along said securing means from the site of its pivotal support by said fork,

(k) the rearward extremity of said lever arm being pivotably associated with said handle means,

(l) whereby forward or upward pivotal motion of said handle means about said axle causes said securing means to be raised, and rearward or downward pivotal motion of said handle means about said axle causes said securing means to be lowered to a position where it can grip an object to be loaded onto said truck.

4,375,936

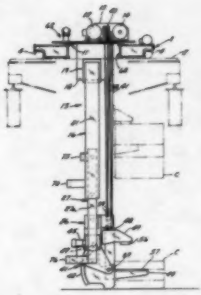
STACKER CRANE FOR MOVEMENT OF COILS

Max J. Dechantsreiter, Milwaukee, Wis., assignor to Harnischfeger Corporation, West Milwaukee, Wis.

Filed Aug. 18, 1980, Ser. No. 179,097

Int. Cl.³ B66C 1/42

U.S. Cl. 414—626 **6 Claims**



1. An overhead travelling crane comprising a wheeled trolley mounted for travel above a floor, said trolley having a turntable, drive means for rotating said turntable, and a power winch on said turntable; a rigid mast assembly mounted on said turntable and extending downwardly therefrom, said rigid mast assembly including a rigid mast and an intermediate mast slidably mounted on said rigid mast, each of said masts comprising two downwardly extending and spaced apart parallel mast members terminating in free ends above the floor, each of said masts including rigidifying brace means connected between its mast members, each mast member having a vertically extending guideway along its inner side, the guideways in each mast facing one another, counterweight means connected between said masts; a load carriage located between and vertically movably mounted on said guideways of said intermediate mast and being rigidly and vertically positioned therealong; cable means connected between said power winch carried by

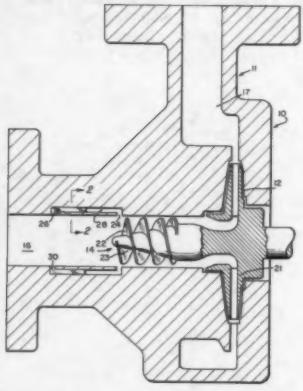
said trolley and connected with said carriage to raise and lower said load carriage relative to said intermediate mast and said intermediate mast relative to said rigid mast; stop means to limit relative travel between said masts and between said intermediate mast and said load carriage; and clamping means carried by said load carriage and including: a gear segment assembly pivotably mounted for rotation about a horizontal pivot axis on said load carriage, said gear segment assembly including a pair of gear segments each having a series of teeth on its arcuate periphery, said gear segment assembly also including a fixed jaw member rigidly and fixedly mounted thereon between said pair of gear segments, said clamping means also including a ram member extending from and generally normal to said fixed jaw member, a movable jaw slidably mounted on and along said ram member for movement toward and away from said fixed jaw member for cooperative gripping engagement therewith, and power means carried by said gear segment assembly and located between said pair of gear segments for moving said movable jaw relative to said fixed jaw whereby said jaws can grip a load; and power means carried by said load carriage including a driven pinion meshing with said teeth on said gear segments for rotating said clamping means about said pivot axis for swinging the load carried thereby about an arcuate path of about 90 degrees.

4,375,937

ROTO-DYNAMIC PUMP WITH A BACKFLOW RECIRCULATOR

Paul Cooper, Titusville, N.J., assignor to Ingersoll-Rand Company, Woodcliff Lake, N.J.

Filed Jan. 28, 1981, Ser. No. 229,295
Int. Cl.³ F04D *13/12, 29/68*
U.S. Cl. 415—53 R **7 Claims**



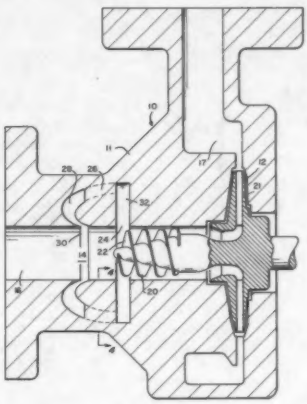
1. A roto-dynamic pump comprising:
(a) a housing having a pump chamber, a leading edge region upstream of the pump chamber, an inlet region upstream of the leading edge region permitting fluid to enter the pump and an outlet region downstream of the pump chamber permitting fluid to discharge from the pump;
(b) a roto-dynamic means in the pump chamber for pumping fluid entering the structure wherein the roto-dynamic means has a leading edge;
(c) a first annular slot substantially parallel to the flow of fluid in the leading edge region for collecting sufficient swirling backflow fluid caused by the roto-dynamic means to prevent cavitation surging of the pump;
(d) an annulus for removing the swirl from the collected fluid wherein the annulus comprises straightening vanes and wherein the length of the annulus is at least about three-fourths the diameter of the leading edge region; and
(e) a second annular slot for returning the straightened fluid into the inlet region at a direction substantially perpendicular to that of the incoming fluid in the inlet region.

4,375,938

ROTO-DYNAMIC PUMP WITH A DIFFUSION BACK FLOW RECIRCULATOR

Jules L. Dussourd, Princeton, N.J., assignor to Ingersoll-Rand Company, Woodcliff Lake, N.J.

Filed Mar. 16, 1981, Ser. No. 243,887
Int. Cl.³ F04D *13/12, 29/68*
U.S. Cl. 415—53 R **16 Claims**



1. A roto-dynamic pump comprising:
(a) a housing having a pump chamber, a leading edge region upstream of the pump chamber, an inlet region upstream of the leading edge region permitting fluid to enter the pump and an outlet region downstream to the pump chamber permitting fluid to discharge from the pump;
(b) a roto-dynamic means in the pump chamber for pumping fluid wherein the roto-dynamic means has a leading edge and wherein swirling fluid backflows upstream;
(c) a catching means at the leading edge region for collecting sufficient swirling backflowing fluid to prevent cavitation surging of the pump;
(d) a diffusing means for converting the kinetic energy of the collected swirling fluid into pressure;
(e) a straightening means for removing the swirl from the diffused fluid; and
(f) a delivery means for returning the straightened fluid to the inlet region.

4,375,939

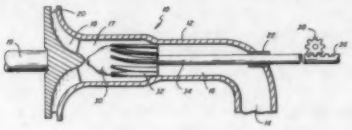
CAPACITY-PREWHIRL CONTROL MECHANISM

Gordon L. Mount, West Monroe; Edward A. Huenniger, Liverpool, and Jarso Mulugeta, East Syracuse, all of N.Y., assignors to Carrier Corporation, Syracuse, N.Y.

Filed Sep. 29, 1980, Ser. No. 191,983
Int. Cl.³ F04D *29/46, 29/56*
U.S. Cl. 415—157 **6 Claims**

1. In a compressor having a housing with an inlet and an outlet with a flow path therebetween and an impeller in said flow path, a capacity-prewhirl control mechanism comprising:
an area of reduced cross section in said flow path upstream of said impeller;
a plug means mounted in said flow path for reciprocating movement with respect to said area of reduced cross section and coacting therewith to define an annular flow path of variable cross-sectional area;

vane means in said annular flow path including a plurality of circumferentially spaced vanes each having an axially extending portion of a first height which transitions into a helically extending portion of reducing height in a downstream direction with all flow passing between said vanes at the point of minimum cross-sectional area in said annular flow path; and



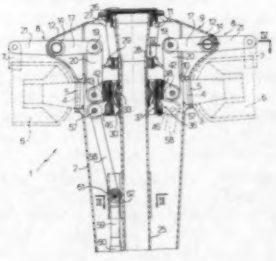
means for reciprocating said plug means whereby the area of said annular flow path is varied and the direction of the portion of said vanes located in said annular flow path at the point of minimum cross-sectional area is varied such that the angle of said vanes at the point of minimum cross-sectional area increases with decreasing minimum cross-sectional area.

4,375,940

ROTOR SHAFT WITH INTERNAL CONTROLS FOR HELICOPTERS

Bruno Lovera, Cardano, and Santino Pancotti, Gallarate, both of Italy, assignors to Costruzioni Aeronautiche Giovanni Agusta S.p.A., Italy

Filed Jan. 24, 1980, Ser. No. 114,963
Claims priority, application Italy, Feb. 27, 1979, 67431 A/79
Int. Cl.³ B64C *27/74*
U.S. Cl. 416—114 **10 Claims**



1. A rotor shaft and hub assembly for helicopters comprising: a rotatable outer shaft assembly including a main tubular shaft and a blade support hub coupled therewith, and arranged in a substantially vertical position, said main shaft having an upper end and a lower end, an axial bore being at the uuper end of the main shaft, the lower end of the main shaft adapted to be rotatably driven, the blade support hub being between the upper end and the lower end of the main shaft;

a fixed inner shaft arranged within said outer shaft assembly and co-axial therewith, the upper end of the inner shaft being disposed in the bore, the upper end of the main shaft being rotatably coupled with the upper end of said inner shaft;

a plurality of kinematic linkages coupled with the main shaft and extending therethrough and each adapted to be connected to a respective blade to control the pitch thereof;

a swivel plate assembly arranged within said outer shaft assembly and supported thereby, said swivel plate assembly being connected to said kinematic linkages and being coupled to the outer surface of said inner shaft to slide axially therealong;

and a plurality of actuator means extending along said inner shaft inside the space lying between said main shaft and said inner shaft, and connected to said swivel plate assembly to control the cyclic and collective pitch of said blades;

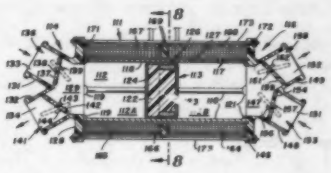
whereby the main shaft serves to protect the actuator means, the swivel plate assembly and part of the kinematic linkages.

4,375,941

METHOD AND APPARATUS FOR PUMPING BLOOD

Frank W. Child, R.R. 2, Eagle Bend, Minn. 56446

Continuation of Ser. No. 890,583, Mar. 20, 1978, Pat. No. 4,221,548. This application Sep. 8, 1980, Ser. No. 185,018
Int. Cl.³ F04B *17/04*
U.S. Cl. 417—53 **26 Claims**



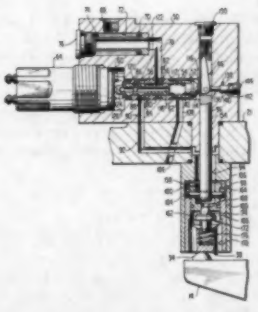
1. A method of pumping blood with the use of a body having a chamber and piston means located in said chamber comprising: separating the chamber into a first section and a second section with the piston means movably disposed in said chamber, reciprocating the piston means in said chamber with sequential reverse magnetic force to move blood into and out of said first and second sections of said chamber, allowing a limited amount of blood of flow around the piston means during movement thereof in said chamber, controlling the flow of blood into and out of the first section of the chamber in response to movement of the piston means in said chamber, and controlling the flow of blood into and out of the second section of the chamber in response to movement of the piston means in said chamber.

4,375,942

TILTING CAM, ROTATING BARREL PUMP

John R. Olson, Oconomowoc, Wis., assignor to Dynes/Rivett Inc., Pewaukee, Wis.

Filed Apr. 21, 1981, Ser. No. 256,222
Int. Cl.³ F04B *1/30*; F15B *9/10, 13/16*
U.S. Cl. 417—222 **66 Claims**



1. A proportional servo actuator comprising:

(a) a body containing a first bore;

(b) a sleeve containing a second bore slidably positioned in said first bore;

(c) a spool slidably positioned in said second bore;
(d) first means for biasing said sleeve in a first direction in said first bore;
(e) second means for biasing said spool in a second direction, opposite to the first direction, in said second bore;
(f) third means for moving said spool in the first direction against the bias of said second means; and
(g) fourth means for moving said sleeve in the second direction against the bias of said first means, said fourth means comprising:
(i) a control cam which
(A) has a cam surface positioned to contact said sleeve and
(B) is mounted for pivotal movement about a pivotal axis perpendicular to the direction of motion of said sleeve;
(ii) fifth means for biasing said control cam in a first angular direction about its pivotal axis; and
(iii) sixth means for moving said control cam in a second angular direction, opposite to said first angular direction, about its pivotal axis,
whereby operation of said sixth means adjusts the motion of said sleeve in said first bore.

31. A tilting cam, rotating barrel pump comprising:
(a) a rotatable barrel containing pumping pistons;
(b) a tiltable pump can operatively connected to said rotatable barrel such that
(i) when said pump cam is perpendicular to the axis of said barrel, said pumping pistons are not displaced axially and no fluid is pumped and
(ii) the more said pump cam is tilted relative to the axis of said barrel, the more the pumping pistons are displaced axially and the more fluid is pumped; and
(c) a proportional servo actuator operatively connected to said pump cam to affect the angle between said pump cam and the axis of said barrel, said proportional servo actuator comprising:
(i) a body containing a first bore;
(ii) a sleeve containing a second bore slidably positioned in said first bore;
(iii) a spool slidably positioned in said second bore;
(iv) first means for biasing said sleeve in a first direction in said first bore;
(v) second means for biasing said spool in a second direction, opposite to the first direction, in said second bore;
(vi) third means for moving said spool in the first direction against the bias of said second means; and
(vii) fourth means for moving said sleeve in the second direction against the bias of said first means, said fourth means comprising:
[A] a cam which has a cam surface positioned to contact said sleeve and is mounted for pivotal movement about a pivotal axis perpendicular to the direction of motion of said sleeve;
[B] fifth means for biasing said control cam in a first angular direction about its pivotal axis; and
[C] sixth means for moving said control cam in a second angular direction, opposite to said first angular direction, about its pivotal axis,
whereby operation of said sixth means changes the relationship between the translational movement of said control cam and the motion of said sleeve in said first bore.

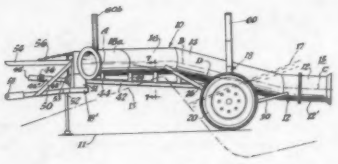
4,375,943

EMBANKMENT PUMP

Clifford H. Stuart, P.O. Box 367, Indiantown, Fla. 33456

Filed Oct. 22, 1980, Ser. No. 199,459
Int. Cl.³ F04B *17/06, 35/06*
U.S. Cl. 417—231 **2 Claims**

1. An embankment pump, connectable to a prime mover having a substantially horizontally oriented prime power source, positionable on the top of an embankment of a body of water comprising:
an elongated tubular conduit, said tubular conduit having an inlet portion submergeable in a body of water;
a riser portion fluidly connected to said inlet portion, said riser portion angled upward in an acute angle from said inlet portion to said riser portion to raise fluid flow from said inlet portion to an outlet portion over said top of an embankment of a body of water;
at least one outlet portion fluidly connected to said riser portion,
a frame connected to said conduit,
at least one wheel rotatable connected to said frame,
a drive shaft housing means connected beneath a portion of said tubular conduit by a plurality of vertical support members, said drive shaft housing means for providing penetration of the top of said embankment, said drive shaft housing means partially encloses a support bearing housing a drive shaft during penetration of said embankment allowing unhindered rotation of said drive shaft when embedded in said embankment; said support bearing attached to said tubular conduit by support members;



the drive shaft having a first end and a second end, said drive shaft rotatably mounted within said support bearing, said first end connected to said prime power source, said second end connected to an impeller, said drive shaft insertable into said tubular conduit maintaining said first end at a generally horizontal position to said prime power source when said inlet portion is submerged in a body of water and said riser portion and drive shaft housing means is positioned astride an embankment of said body of water,
the impeller, rotatably mounted within said conduit and operably connected to said second end of said drive shaft;
said drive shaft housing means embedded in said embankment while said inlet portion is submerged in a body of water and said first end at a generally horizontal position to said prime power source, centerlines of said inlet portion, said riser portion and said outlet portion having relative angular displacements less in degrees from the horizontal than a single straight portion placed on top of said embankment.

4,375,944

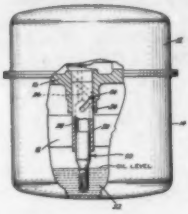
LUBRICATING DEVICE FOR A MOTOR COMPRESSOR

Rudolf H. Wolf, Adrian, Mich., assignor to Tecumseh Products Company, Tecumseh, Mich.

Continuation-in-part of Ser. No. 722,641, Sep. 13, 1976, Pat. No. 4,097,185. This application Apr. 3, 1978, Ser. No. 892,657
Int. Cl.³ F04B *39/02*
U.S. Cl. 417—368 **3 Claims**

1. A drawn metallic pick-up tube, especially for use for supplying lubricant to a lubricant passage in a hermetic device which includes a fluid sump and a vertically disposed rotary shaft above the fluid level in the sump, said tube comprising: a large diameter upper cylindrical portion open at the upper end and adapted for being fitted into a central bore in the shaft, said tube having an open, smaller diameter lower cylindrical portion adapted to be immersed in fluid in the sump, said lower cylindrical portion having a generally cylindrical inner surface and an outer surface, a tapering transition portion connecting the upper and lower cylindrical portions, an inlet port extend-

ing axially into the lower end of said lower cylindrical portion, and a pair of diametrically opposite axial deformations in said



lower cylindrical portion forming grooves on the outer surface and ribs with rounded contours on the inner surface.

4,375,945

FUEL INJECTION PUMPING APPARATUS

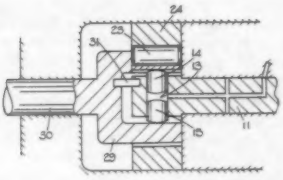
Boaz A. Jarrett, London, and Dorian F. Mowbray, Burnham, both of England, assignors to Kucas Industries Limited, Birmingham, England

Filed Jan. 6, 1981, Ser. No. 222,886

Claims priority, application United Kingdom, Jan. 31, 1980, 8003263

Int. Cl.³ F04B *19/02*

U.S. Cl. 417—462 **4 Claims**



1. A liquid fuel injection pumping apparatus for supplying fuel to an internal combustion engine and of the kind comprising a rotary distributor member housed within a body, a transversely disposed bore formed in the distributor member, a plunger positioned in the bore, an annular cam ring surrounding the distributor member and having inwardly directed cam lobes for imparting inward movement to the pumping plunger and means for conveying fuel to and from said bore, a further plunger in said bore, means surrounding the distributor member but separate therefrom, said means acting to retain said further plunger against outward movement in the bore.

4,375,946

WELL PUMP

John S. Page, Jr., 21372 Brookhurst St., No. 312, Huntington Beach, Calif. 92646

Filed Apr. 20, 1981, Ser. No. 255,770

Int. Cl.³ F04B *21/02, 21/06;* **F16K** *15/14*

U.S. Cl. 417—566 **12 Claims**

1. In well fluid pumping apparatus, the combination comprising

(a) body structure defining an upright plunger bore,

(b) a plunger and a plunger stem reciprocable in said bore,

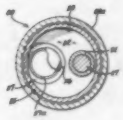
(c) the body structure also defining chamber means sidewardly offset from an axis defined by said plunger bore and communicating with said bore, and

(d) lower valve means carried by said body structure to pass intake fluid via said chamber means into said plunger bore in response to stroking of the plunger in one direction in said bore, and to pass discharge fluid from said plunger bore into and from said chamber means in response to stroking of the plunger in the opposite direction in said bore,

(e) the plunger bore into which liquid is passed being below the level of said valve means, the plunger extending generally vertically, the bore being open to the well below the apparatus,

(f) the valve means including an elastomeric sleeve extending about an axis defined by the plunger, the sleeve being radially movable away from valve ports defined by said valve means to allow said passage of fluid into said plunger bore, and the sleeve being radially movable toward said ports to close the ports during said passage of fluid from said plunger bore, the stem extending upwardly through said sleeve,

(g) upper valve means including valve elements located above the level of the lower valve means, one of said valve elements being movable relative to the other element and the valve elements when relatively open defining an annularly extending flow path which is upwardly open, the stem being reciprocable with the plunger, independently of movement of said movable element, the stem extending upwardly through said upper valve means,



(h) guide means associated with one element of the upper valve, said stem extending through said guide means for reciprocation relative to said guide means,

(i) the plunger having an up-position in which it is openly spaced below the lower valve means, and the plunger bore extending downwardly from a location immediately below the lower valve means whereby a straight through annular flow path is provided in approximate alignment with said flow path through the upper valve means for passing fluid flow upwardly from said bore and through the elastomeric sleeve and the upper valve means, in response to upward movement of the plunger,

(j) the entirety of the lower valve means located within a vertical extension of a cylinder defined by an outer surface of said body.

4,375,947

INJECTION MOLDING SYSTEM

Paul Marcus, 85 Pascack Rd., Pearl River, N.Y. 10965

Continuation of Ser. No. 111,186, Jan. 11, 1980, abandoned, which is a division of Ser. No. 43,184, May 29, 1979, abandoned. This application Jan. 15, 1982, Ser. No. 339,665

Int. Cl.³ B29C *17/07*

U.S. Cl. 425—143 **14 Claims**

1. A single injection blow molding apparatus for making a selected oriented finished product, the apparatus comprising:

a support structure;

a first platen on the support structure;

an injection molding means and a first and second blow

molding means being in line and on opposed sides of the injection molding means, the injection molding means and first and second blow molding means being mounted on the first platen;

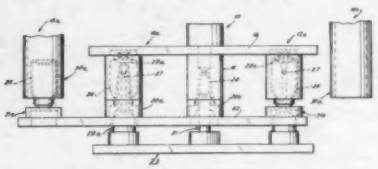
a second platen on the support structure being axially reciprocal and laterally reciprocal relative to the first platen;

a first and second neck bushing assembly and a first and second pick-off bushing assembly on the second platen, the bushing assemblies all being in line, the first and second pick-off bushing assemblies being on opposite sides of the first and second neck bushing assemblies;

a third platen on the support structure being axially reciprocal relative to the first and second platens;

a first core rod assembly and a first and second blow rod assembly on the third platen, the first and second blow rod assemblies being in line and on opposed sides of the first core rod assembly, the first core rod assembly and injection molding means cooperating alternately with the first and second neck bushing assemblies in forming an injection molding station for molding a parison into a selected configuration, the first and second blow rod assemblies and the first and second blow molds cooperating with the first and second neck bushing assemblies for respectively forming first and second blow molding stations for blow molding the finished product and alternately cooperating with the first and second pick-off bushing assemblies for respectively forming first and second cooling stations for cooling the finished product;

means for axially reciprocating the platens respectively towards one another from a platen open position to a platen closed position and while the platens are in the



platen closed position a first parison is injection molded into a selected configuration at the injection mold station defined by the relatively axially reciprocal injection molding means and the first core rod assembly and first neck bushing assembly reciprocal between an open and closed position as the platens reciprocate between their open and closed positions, respectively;

means for axially reciprocating the platens relatively away from one another from the platen closed position to the platen open position and the first parison being moved axially from the injection molding means and first core rod assembly at the injection molding station when the platens are reciprocated from their closed position to their open position and the injection molding means and first core rod assembly are relatively reciprocated to an open position and supporting the first parison between the open injection molding means and first core rod assembly by the first neck bushing assembly;

means for laterally reciprocating the second platen in a first direction to transfer laterally the first parison to the first blow molding station by the first neck bushing assembly and to axially align the first neck bushing assembly with the first blow molding means and first blow rod assembly;

means for conditioning the first parison to orientation temperature after injection molding and prior to blow molding;

the platens being adapted to be reciprocated to their closed position to permit blow molding the first parison while at orientation temperature at the first blow molding station into the configuration of the first finished product, the first blow molding station defined by the relatively axially reciprocal first blow molding means and the first blow rod assembly and first neck bushing assembly reciprocal between an open and closed position as the platens reciprocate between their open and closed position, respectively;

the first parison and a first previously made finished product being respectively supported and moved axially and laterally in the first direction between the injection molding station and the first blow molding station and between the first blow molding station and a first finished product removal station by the first neck bushing assembly and the first pick-off bushing assembly, respectively, when the platens are axially reciprocal to their open positions and the second platen is laterally reciprocated in the first direction;

the first parison being transferred from the injection molding station by axially removing the first core rod assembly from the first parison and the first parison from the injection molding means and transferring the first parison to the first blow molding station, the first previously made finished product being transferred from the first blow molding station by axially removing the first blow rod assembly from the first previously finished product and the first previously made finished product from the first blow molding means and transferring the first previously made finished product to a position for removal;

after the first parison is transferred to the first blow molding station, a second parison and second previously made finished product being respectively supported and moved axially and laterally in a second direction directly opposite to the first lateral direction between the injection molding station and second blow molding station and between the second blow molding station and a second finished product removal station, by the second neck bushing assembly and the second pick-off bushing assembly, respectively, when the platens axially reciprocate to their open position and the second platen is laterally reciprocated in the second direction;

the second parison being transferred from the injection molding station by axially removing the first core rod assembly from the second parison and the second parison from the injection molding means and transferring the second parison to the second blow molding station and the second previously made finished product being transferred from the second blow molding station by axially removing the second blow rod assembly from the second previously made finished product and the second previously made finished product from the second blow molding means and transferring the second previously made finished product to a position for removal; and

two stage cooling for the blown finished product being provided by enclosing the blow molding means and blow rod assembly about the finished product twice before the finished product is removed from the apparatus.

4,375,948

PLASTIC BUCKET DEFINING ANNULAR INWARDLY PROJECTING RIDGE AND METHOD

John W. von Holdt, 7430 N. Croname Rd., Niles, Ill. 60648

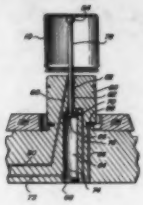
Division of Ser. No. 101,220, Dec. 7, 1979, Pat. No. 4,308,970, which is a continuation-in-part of Ser. No. 963,736, Nov. 27, 1978, Pat. No. 4,210,258. This application Dec. 30, 1980, Ser. No. 221,370

Int. Cl.[3] **B29C** *7/00*

U.S. Cl. 425—437 **8 Claims**

2. Apparatus for removing a molded bucket from a mold core which comprises pusher means for pressing against the bucket interior, for removal of said bucket from the core, said core defining a recess for receiving an inwardly-projecting member of the bucket formed thereon, the improvement comprising, in combination: pressurized fluid supply means, and fluid supply channel means communicating through said mold core between said pressurized fluid supply means and the inwardly-projecting member to provide a supply of pressurized fluid to circumferentially expand said plastic bucket adja-

cent said member, to facilitate its removal from the core by the pusher means, said channel means being of sufficiently nar-



rowed dimension to prevent the substantial flowing of liquid molding compound into it during the molding operation.

4,375,949

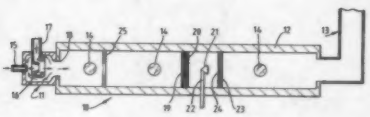
METHOD OF AT LEAST PARTIALLY BURNING A HYDROCARBON AND/OR CARBONACEOUS FUEL

Kailash C. Salooja, Reading, England, assignor to Exxon Research and Engineering Co., Florham Park, N.J.

Continuation of Ser. No. 948,318, Oct. 3, 1978, abandoned. This application Dec. 29, 1980, Ser. No. 220,747

Int. Cl.³ E23C *11/02*

U.S. Cl. 431—7 **10 Claims**



1. A method of at least partially burning a hydrocarbon and/or carbonaceous fuel comprising the following steps in sequence:

(a) partially burning the fuel in a first stage flame and producing a substantially carbon-free or smoke-free partially combusted gaseous phase fuel at a temperature of at least 800° C.;

(b) contacting the said partially combusted fuel with a solid, substantially non-volatile catalyst which is active for reducing the amount of nitrogen oxide(s) in the partially combusted fuel, the contacting being effected at a temperature of at least 800° C.; and

(c) at least partially burning the partially combusted fuel in a second stage flame to yield hot gaseous products of relatively low pollutant content.

4,375,950

AUTOMATIC COMBUSTION CONTROL METHOD AND APPARATUS

Benton A. Durley, III, Rte. 45, Druce Lake, P.O. Box 304, Grayslake, Ill. 60030

Filed Apr. 1, 1981, Ser. No. 250,017

Int. Cl.³ F23N *5/00, 1/00*

U.S. Cl. 431—12 **18 Claims**

1. Combustion control apparatus, comprising

combustion chamber means having a combustion chamber therein,

combustion means for causing the combustion of fuel in said combustion chamber,

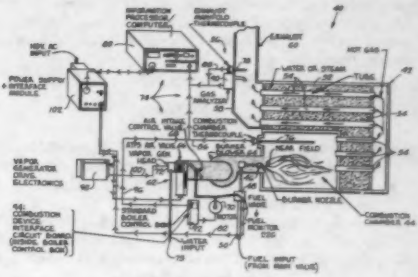
heat exchanger means connected with said combustion chamber for deriving useful heat from the combustion therein,

exhaust means connected with said heat exchanger means for removing the waste products of combustion from said heat exchanger means and said combustion means,

fuel supply means for supplying fuel to said combustion means,

variable air supply means for supplying a variable amount of air to said combustion means for supporting the combustion of the fuel therein,

combustion temperature measuring means for measuring the combustion temperature in said combustion chamber and for producing a first quantity corresponding in magnitude to said combustion temperature,



exhaust temperature measuring means for measuring the exhaust temperature in said exhaust means and for producing a second quantity corresponding in magnitude to said exhaust temperature,

summation means for producing a summation quantity comprising a summation of said first and second quantities,

and control means connected to said variable air supply means for varying the air supplied to said combustion means in such manner as to maximize said summation quantity,

whereby the combustion efficiency is also maximized.

4,375,951

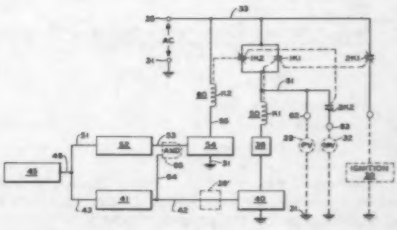
BILEVEL FLAME SIGNAL SENSING CIRCUIT

John E. Bohan, Jr., Minneapolis, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Aug. 18, 1980, Ser. No. 179,301

Int. Cl.³ F23Q *9/08*

U.S. Cl. 431—46 **11 Claims**



1. A fuel burner control system having a fail safe sensing circuit to insure that a pilot valve has been opened and a pilot flame is established at a pilot burner before a main fuel valve is opened, including: flame sensing means responsive to a flame at said pilot burner with said sensing means having output circuit means; first threshold signal processing circuit means for operation of first threshold switch means; said switch means including normally nonconductive circuit means; second threshold signal processing circuit means for operation of second threshold switch means; said second threshold switch means including normally conductive circuit means and normally nonconductive circuit means; said first and said second threshold signal processing circuit means each being connected to said

flame sensing output circuit means; said second threshold conductive switch means connected to initially energize said first threshold switch means and said pilot valve through said normally conductive circuit means; said first threshold circuit means being in an energized state upon said first threshold signal processing circuit means sensing a first flame signal by causing said first threshold normally nonconductive circuit means to become conductive; and said second threshold signal processing circuit means subsequently sensing a second, larger flame signal and opening normally conductive circuit means and closing normally nonconductive circuit means to energize said main fuel valve in a safe manner through the normally nonconductive circuit means of said first threshold conductive switch means.

4,375,952

WALL FIRED DUCT HEATER

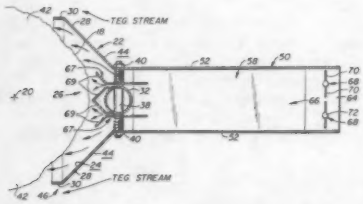
Ralph R. Vosper, San Jose, Calif.; Arie W. Spoormaker, Maassluis, Netherlands; Chester S. Binasik, Palo Alto, and Norman E. Harthun, San Carlos, both of Calif., assignors to Coen Company, Inc., Burlingame, Calif.

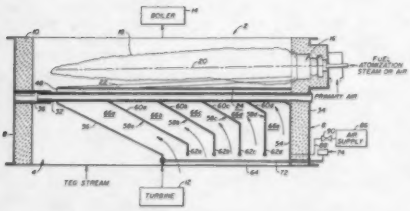
Continuation-in-part of Ser. No. 73,348, Sep. 7, 1979, Pat. No. 4,286,945. This application Aug. 28, 1980, Ser. No. 182,249

The portion of the term of this patent subsequent to Sep. 1, 1998, has been disclaimed.

Int. Cl.³ F23M 9/06; F23D 13/24

U.S. Cl. 431—171 **11 Claims**





1. Apparatus for heating a gas flowing through a duct defined by opposing duct walls which are generally parallel to the gas flow direction, the apparatus comprising: at least one burner including a fuel atomizing nozzle means for mounting the burner to the wall for the discharge of fuel, means for defining a burner throat including an opening which is substantially concentric with respect to the nozzle and communicates the nozzle with an interior of the duct so that atomized fuel from the nozzle can be discharged via the opening into the duct; and means for fluidly connecting the burner with a supply of primary combustion air for discharge into the duct with the atomized fuel; a flame shield including means connecting the shield with a wall of the duct so that the shield is positioned upstream of the flame and extends generally parallel to the flame into the duct, the shield defining a trough protecting the flame from the gas flow through the duct; means defining a passage extending through the flame shield; plenum means protruding in an upstream direction from an upstream side of the flame shield and being in fluid communication with the passage; means for supplying the plenum means with a gas having an oxygen component furnishing secondary combustion oxygen for the flame; and means defining a passage arranged and positioned to direct a majority of the primary combustion air into the downstream portion of the flame.

4,375,953

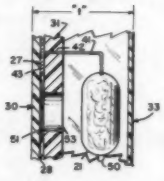
MINIATURE PHOTOFLASH UNIT WITH ENCAPSULATED FLASH LAMPS

Andre C. Bouchard, Peabody; John A. Scholz, Danvers, and Timothy Fohl, Carlisle, all of Mass., assignors to GTE Products Corporation, Stamford, Conn.

Filed Sep. 4, 1980, Ser. No. 183,915

Int. Cl.³ F21K 5/02

U.S. Cl. 431—359 **37 Claims**



1. A miniature photoflash unit for being electrically activated when electrically connected to a power source associated with a camera, said photoflash unit comprising:

a small, substantially planar housing including an electrically insulative base and light-transmitting cover means secured to or forming a part of said base;

lamp-firing circuitry located on an external surface of said base;

a plurality of subminiature, electrically-activated flash lamps secured to said base and located within said housing in a substantially planar array adjacent an internal surface of said base, each of said flash lamps including a light-transmitting envelope and a pair of lead-in wires projecting therefrom, each of said lead-in wires including an end portion which passes through said base and lies substantially flush with said external surface of said base, said end portions being directly electrically connected to said lamp-firing circuitry located on said external surface, said flash lamps occupying first and second separate regions within said housing, said lamp-firing circuitry selectively igniting said flash lamps in both of said regions, said circuitry not including a metal eyelet or the like as part thereof;

means for substantially covering said lamp-firing circuitry on said external surface of said base; and

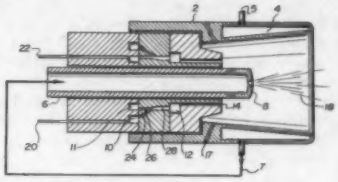
a singular mounting device secured to said housing or forming a part thereof for electrically connecting said photoflash unit to said power source associated with said camera when said mounting device is connected to said power source, said device including first and second conductive terminals positioned on a surface of said device and electrically joined to said lamp-firing circuitry for supplying ignition pulses to said circuitry to effect said selective ignition of said flash lamps in response to receipt of said pulses from said power source.

4,375,954

OIL AND GAS COMBINATION NOZZLE

Roger Trudel, 1616 First Ave., Val Caron, Ontario, Canada P0M 3A0

Filed Dec. 26, 1979, Ser. No. 107,277
Int. Cl.³ F23M 3/00; F23D 11/44
U.S. Cl. 431—9 19 Claims



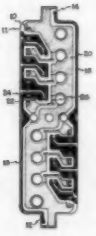
1. A combination oil and gas nozzle comprising
a housing, a forward portion of which includes an enclosed annular chamber adjacent at least a part of a combustion zone,
a gas inlet into said housing leading to a mixing chamber within said housing,
an air inlet into said housing leading to said mixing chamber,
a series of passages leading from said mixing chamber to a rearward portion of said combustion zone,
an oil lance and nozzle extending through the rear portion of said housing and extending essentially centrally into said combustion zone downstream of the outlet of said series of passages,
an oil inlet to said essentially annular chamber, and
an oil passage from said chamber to said oil lance and nozzle.

4,375,955

FLASH LAMP ARRAY CIRCUIT WITH IMPROVED FUSE MEANS

Edward J. Collins, Mentor-on-the-Lake, and Mary E. Suster, Chagrin Falls, both of Ohio, assignors to General Electric Company, Schenectady, N.Y.

Filed Nov. 10, 1980, Ser. No. 205,411
Int. Cl.³ F21K 5/00; G03B 15/02
U.S. Cl. 431—359 7 Claims



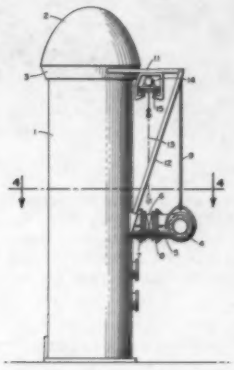
1. An improved photoflash array having a plurality of high voltage type flash lamps connected to a lamp firing circuit pattern of conductive carbon ink deposited on a circuit board with radiation-sensitive switches and fuse elements being connected in said circuit pattern for sequential firing of said flash lamps, said fuse elements being provided by narrowing the width of the circuit pattern at the fuse locations to undergo thermal decomposition when activated with radiation, wherein the improvement comprises each of said fuse elements being a plurality of spaced apart strips.

4,375,956

HOT BLAST STOVE ARRANGEMENT FOR A BLAST FURNACE

Jan H. Brandesburg, and Cornelis van Herk, both of Ijmuiden, Netherlands, assignors to Hoogovens Ijmuiden B.V., Ijmuiden, Netherlands

Continuation of Ser. No. 962,669, Nov. 21, 1978, abandoned. This application Sep. 15, 1980, Ser. No. 187,454
Claims priority, application Netherlands, Nov. 30, 1977, 7713191
Int. Cl.³ F27D 23/00; C21B 7/00
U.S. Cl. 432—76 3 Claims



1. A hot blast stove arrangement for a blast furnace, comprising
a plurality of hot blast stoves each having a vertical outer wall, a roof dome, a hot blast outlet in said outer wall, a rigid conical ring interconnecting said outer wall and said dome and creating a stiffened transitional region;
a hot blast main;
a plurality of hot blast branches respectively connecting said hot blast outlets of said stoves to said main, each branch having a removable valve by which it can be shut off;
a plurality of support structures for the hot blast main respectively mounted on the respective stoves to support the main adjacent each stove, each support structure comprising a rod system mounted on said rigid conical ring and extending outwardly therefrom to an outer end located above the hot blast main, at least one suspension element suspending the main from said outer end of the rod system in a manner permitting horizontal movement of the main towards and away from the stove, and at least one loadbearing strut connected at one end to the said outer end of the rod system and at its other end to the outer wall of the stove adjacent the hot blast outlet; and
a crane track mounted at the lower side of said rod systems of said support structures so as to extend along above said valves in the hot blast branches whereby a traversing crane running on said track can be used to remove said valves from the branches.

4,375,957

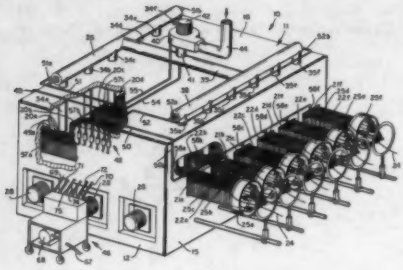
CLEANING SYSTEM FOR CONTINUOUS YARN HEAT SET MACHINE

Kenneth L. Smith, 101 E. Indiana Ave., Lafayette, Ga. 30728

Filed Jul. 2, 1981, Ser. No. 280,109
Int. Cl.³ F24D 23/02, 23/00
U.S. Cl. 432—2 7 Claims

4. Apparatus for cleaning a yarn heat setting machine of the type including a housing with a plurality of yarn paths extending therethrough, means for recirculating steam through the yarn paths, and exhaust stacks at the ends of the yarn paths

connected to a common exhaust conduit system for exhausting gases from the yarn paths in parallel through the exhaust stacks and then through the common exhaust conduit system, the improvement therein of spray means for directing a spray of cleaning liquid into the lower end of each exhaust stack, and



control means for actuating said spray means for predetermined durations whereby the cleaning liquid coats the inside surfaces of the exhaust stacks and coats the inside surfaces of the common exhaust system as the gases are exhausted through the exhaust stacks and the common exhaust system.

4,375,958

METHOD FOR PREHEATING STEEL SCRAP BY EXHAUST GAS FROM STEELMAKING ELECTRIC FURNACE

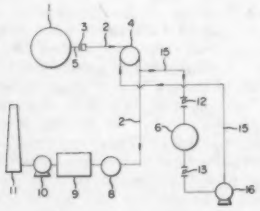
Takasaburo Date, Yokohama; Toshimichi Maki, Tokyo; Mitsuya Iguchi, Himeji; Sumifusa Iwamaru, Himeji, and Hisashi Watanabe, Himeji, all of Japan, assignors to Nippon Kokan Kabushiki Kaisha and Toshin Seiko Kabushiki Kaisha, both of Tokyo, Japan

Filed Jun. 1, 1981, Ser. No. 268,797

Claims priority, application Japan, Jun. 6, 1980, 55-76315; Aug. 29, 1980, 55-119533

Int. Cl.³ F27D *3/00, 17/00*

U.S. Cl. 432—9 **6 Claims**



1. A method of preheating steel scrap by an exhaust gas from a steelmaking electric furnace in a steelmaking system, and in which the steelmaking system comprises an electric furnace; an exhaust gas discharge duct coupled to said furnace; an exhaust gas combustion chamber coupled in said exhaust discharge duct; a branch duct branching off of said exhaust gas discharge duct downstream of said exhaust gas combustion chamber; and at least one steel scrap preheating chamber coupled in said branch duct to receive exhaust gas from said branch duct;

the method comprising:

directing, when manufacturing steel from steel scrap in said electric furnace, an exhaust gas produced in said electric furnace to said exhaust gas combustion chamber via said exhaust gas discharge duct to cause in said exhaust gas combustion chamber combustion of carbon monoxide contained in said exhaust gas to form a combustion exhaust gas;

selectively directing only part of said combustion exhaust gas from said exhaust gas combustion chamber into said at least one scrap preheating chamber via said branch duct branching off from said exhaust gas discharge duct to preheat steel scrap in said at least one scrap preheating chamber to a prescribed temperature; and

feeding back all of said combustion exhaust gas from said at least one scrap preheating chamber, after said preheating of steel scrap in said at least one scrap preheating chamber, to said exhaust gas combustion chamber to cause combustion in said exhaust gas combustion chamber of an incomplete-combustion gas produced by the incomplete combustion of combustible substances entrapped in steel scrap being preheated, and which incomplete-combustion gas is contained in said combustion exhaust gas fed back from said at least one scrap preheating chamber.

4,375,959

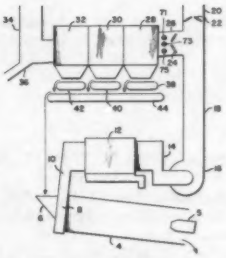
WASTE HEAT RECOVERY IN ASPHALT MIXING PLANT

Roger A. Powell, Norristown, Pa., assignor to The McCarter Corporation, Norristown, Pa.

Filed Oct. 16, 1980, Ser. No. 197,649

Int. Cl.³ F26B *3/20*

U.S. Cl. 432—223 **23 Claims**



1. In an asphalt mixing plant comprising:

feed bin means for receiving solid material from the group consisting of virgin aggregate and used asphalt-aggregate compositions at substantially ambient temperatures and for temporarily containing said material prior to delivery to a drying device;

drying means for temporarily containing aggregate including means for showering the aggregate through a moving air stream;

burner means for directly supplying heat to the aggregate and the moving air stream in the drying means; and

means for effecting a flow of exhaust gas out of the drying means to carry away moisture from the drying means;

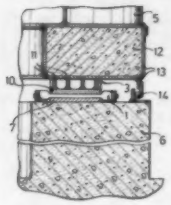
wherein the improvement comprises duct means for conducting at least part of the exhaust gas from the drying means to said feed bin means, at least part of the wall of said duct means serving to conduct heat from said exhaust gas to the solid material in said feed bin means while isolating said exhaust gas from said material to prevent moisture from said exhaust gas from condensing on said material, and means for initiating condensation of moisture from said exhaust gas substantially adjacent to but upstream of the location where the exhaust gas within the duct means first reaches the location at which said part of the wall of said duct means conducts heat from said exhaust gas to said solid material.

4,375,960

MEANS FOR TRANSPORTING/ROTATING THE POT OF A SMELTING FURNACE

Harald Krogsrud, Gjettum, Norway, assignor to Elkem A/S, Oslo, Norway

Filed Feb. 9, 1981, Ser. No. 232,723
Claims priority, application Norway, Feb. 27, 1980, 800545
Int. Cl.³ F27D 3/00
U.S. Cl. 432—239 6 Claims



1. In a furnace of the type having a foundation, a furnace pot normally resting on said foundation, and apparatus for rotating at least an upper section of said furnace pot, the improvement comprising a plurality of transport means distributed along a circle of rotation of the furnace pot, said transport means including:

(a) a base section rigidly secured to the furnace foundation;

(b) a plurality of flexible hoses disposed on an upper surface of said base section, said flexible hoses being operative to receive pressure therein for expansion thereof, said hoses being free to roll on said upper surface;

(c) lifting means disposed on said plurality of hoses, said lifting means being arranged for lifting said furnace pot from said foundation whenever said hoses are expanded, the expansion of said hoses allowing said furnace pot to rotate relative to said foundation; and

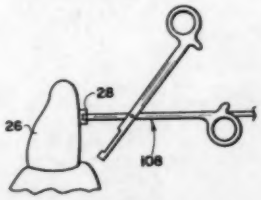
(d) retractor devices disposed at opposed ends of the transport means for returning the transport means to its original position when pressure is removed from said flexible hoses.

4,375,961

SONIC BONDING MEANS FOR ORTHODONTICS

Phillip A. Brooks, 436 NW. 46 Ter., Oklahoma City, Okla. 73118

Filed Sep. 28, 1981, Ser. No. 306,414
Int. Cl.³ A61C 3/00
U.S. Cl. 433—4 4 Claims



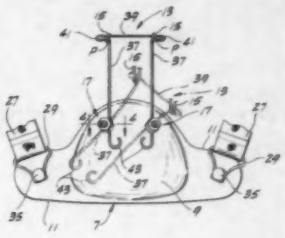
1. Sonic apparatus for bonding one article to another and comprising sonic transmission line means in operable connection with one of the articles for transmitting sonic energy thereto, and bonding agent means interposed between the articles for response to the sonic energy to bond the articles together upon engagement therebetween, one of said articles being a tooth and the other article being an orthodontic bracket, and wherein the sonic transmission line is connected to pincer means, said pincer means being provided with article engaging means for holding the orthodontic bracket in engagement with the tooth during the bonding operation.

4,375,962

ORTHODONTIC TRACTION APPARATUS

Irvin S. DeWoskin, St. Louis County, Mo., assignor to Orthoband Company, Inc., Barnhart, Mo.

Filed Nov. 2, 1981, Ser. No. 317,479
Int. Cl.³ A61C 7/00
U.S. Cl. 433—5 12 Claims



1. Orthodontic traction apparatus adapted for attachment, via elastic bands or the like, to an instrumentality or instrumentalities associated with the teeth for applying traction to the teeth generally in the forward direction with respect to the head, comprising:

headgear adapted to be worn on the head;

a relatively rigid chin cup having central section shaped to conform to the contour of the chin and end sections adapted for connection to said headgear;

an implement in the form of a wire arm on the central section of the chin cup adapted to extend up from the chin cup for attachment at its upper end, via said elastic bands, to said instrumentality or instrumentalities associated with the teeth for applying traction to the teeth generally in said forward direction;

means mounting the arm on the central section of the chin cup for movement relative to the chin cup in the direction of the longitudinal axis of the arm for adjustment of the position of the upper end of the arm relative to the chin cup and to the mouth and for movement relative to the chin cup generally in side-to-side direction with respect to the head; and

means for securing the arm in various positions of adjustment.

4,375,963

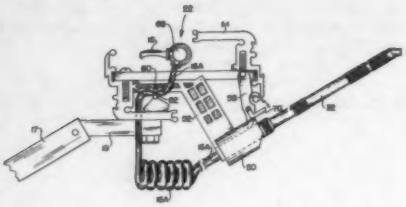
CONTROL UNIT FOR DENTAL HANDPIECES

Frank A. Betush, Carson, Calif., assignor to Progressive Machine Products, Carson, Calif.

Filed Jun. 25, 1981, Ser. No. 277,116
Int. Cl.³ A61C 1/02
U.S. Cl. 433—28 5 Claims

1. A control unit for supporting at least one dental handpiece, and the like, and for controlling the distribution of pressurized fluid thereto, said control unit including; a frame; an arm pivotally mounted on said frame; a holder for a handpiece mounted at one end of said arm; a stationary actuator mounted on said frame adjacent to said holder to be engaged by said handpiece when said handpiece is inserted into said holder and to cause the handpiece angularly to move said arm and said holder to a down position; a flexible tube extending through said frame to said handpiece for supplying pressurized fluid to said handpiece and for normally holding said arm in an up position; and a pinch member mounted on said frame in position to pinch said flexible tube against the other end of said arm and prevent the flow of said fluid to said handpiece when said handpiece is inserted into said holder and is engaged by said

actuator so that said arm is in said down position and the other end of said arm has been moved angularly against said pinch member, and automatically to release said flexible tube and



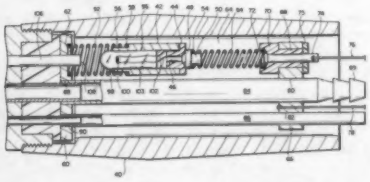
enable said tube to bias said arm to its up position and permit the flow of said fluid to said handpiece when said handpiece is removed from said holder.

4,375,964

DENTAL INSTRUMENT HAVING A LAMP ASSEMBLY SUSPENSION INCLUDING VIBRATION AND THERMAL ISOLATION MEANS

Arthur A. Knopp, Chalfont, and Leonard J. Kelly, Norristown, both of Pa., assignors to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Continuation of Ser. No. 12,630, Feb. 16, 1979, abandoned. This application Nov. 3, 1980, Ser. No. 203,188
Int. Cl.³ A61C 1/00
U.S. Cl. 433—29 37 Claims



1. A dental instrument for providing intraoral illumination comprising:

(a) housing means;

(b) light guiding means having a first terminus associated with said housing means and a second terminus outside of said housing means;

(c) light source mounting means within said housing means for holding a light source in close proximity to said first terminus of said light guiding means and free from contact with said housing means, said mounting means constituting the sole support of said light source and having a pair of electrical contacts for making electrical connection to power source connecting means; and

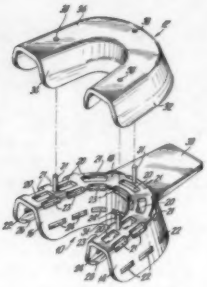
(d) support means within said housing means for supporting said light source mounting means, said support means comprising resilient means constituting the sole suspension of said light source mounting means therefrom and said resilient means having properties of resilience and low mass relative to the mass of said mounting means so that transfer of heat and/or mechanical vibration between said housing means and said light source mounting means through said resilient means is substantially inhibited during use of said dental instrument.

4,375,965

DENTAL IMPRESSION TRAY ASSEMBLY

Bernard Weissman, New York, N.Y., assignor to IPCO Corporation, White Plains, N.Y.

Filed Jun. 15, 1981, Ser. No. 273,663
Int. Cl.³ A61C 9/00
U.S. Cl. 433—37 12 Claims



1. A dental impression forming apparatus comprising:

a dental impression tray in which a negative impression of a dental area is to be formed in dental impression material;

aperture means provided in said tray for passage therethrough of the dental impression material into said tray:

cover means for forcing the dental impression material through said aperture means into said tray;

said cover means including a cover member fitting over said tray for receiving the dental impression material therein, whereby upon application, in situ, of said cover member onto said tray, the dental impression material is forced through said aperture means into said tray and around the dental area;

said tray and said cover member being provided with alignment means to guide said cover member toward said tray; and

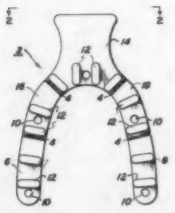
said alignment means including at least one guide pin disposed on said tray and a corresponding cooperating hole provided in said cover member for receiving said guide pin therethrough.

4,375,966

SYSTEM FOR MAKING DIRECT ORAL IMPRESSION TRAY

Frank H. Freeman, Farmington, Mich., assignor to Sybron Corporation, Rochester, N.Y.

Filed Aug. 24, 1981, Ser. No. 295,343
Int. Cl.³ A61L 9/00
U.S. Cl. 433—37 2 Claims



1. A system for making a custom oral impression tray in situ including a transporter member to support a body of moldable impression tray material, and a spacer member;

said transporter member comprising an arch shaped plate for

extension into the oral cavity of a subject and a handle extending from said plate, said plate having a plurality of fracture lines to facilitate the selective removal of pieces of said plate, said plate including a plurality of apertures for the intrusion thereinto of moldable impression tray material for mechanical locking of said tray material with said transporter plate, and a plurality of raised abutments on said plate to establish positive bite stops relative to said plate;

said tray material comprising a mass of moldable polymerizable material placed on said transporter member and intruded into at least one of said apertures;

said spacer member placed on said tray material and comprising a pad of uniform thickness to create a controlled space between said tray material and the oral structure of the subject, and to prevent penetration of said tray material into interstitial spaces between the teeth of the subject,

said transporter, tray material, and spacer system being adapted for introduction into the oral cavity of the subject for the subject to bite onto said system to the bite stops of said transporter,

whereby, when said system is removed from the oral cavity and said spacer removed from said system, the resulting custom oral impression tray defines a tray cavity in the form of the oral structure of the subject with clearance space in said tray cavity to accommodate impression material for the subsequent use of said custom tray in making an oral impression.

4,375,967

DENTAL COMPOSITION CONTAINING X-RAY OPAQUE MATERIAL

Roland Schaefer, Friedrichsdorf, Fed. Rep. of Germany, assignor to Kulzer & Co. GmbH, Bad Homburg von der Howe, Fed. Rep. of Germany

Filed Aug. 24, 1981, Ser. No. 295,700

Claims priority, application Fed. Rep. of Germany, Oct. 21, 1980, 3039664

Int. Cl.³ A61K *6/08*

U.S. Cl. 433—199 **15 Claims**

1. A dental composition which when polymerized is (i) opaque to X-ray radiation and which (ii) can be polished to a high gloss comprising a polymerizable binder which polymerizes to form a polymerized dental composition and contains fine particles of an inorganic filler which imparts X-ray opacity to said composition, said inorganic filler comprising a zeolitic alumino silicate of at least one metal selected from the group consisting of calcium, strontium, barium, lanthanum, rare earth metals having atomic numbers from 58–71, tantalum, and hafnium, said polymerizable binder is at least one binder selected from the group consisting of the esters of acrylic acid with mono- and polyhydric alcohols, urethane-acrylates, urethane-methacrylates and the reaction product of glycidylmethacrylate and bisphenol A.

4,375,968

THERAPEUTIC CALCIUM HYDROXIDE DENTAL PREPARATION AND METHOD

Mark J. Manhart, 727 Medical Arts Bldg., Omaha, Nebr. 68102

Filed Jul. 10, 1981, Ser. No. 281,978

Int. Cl.³ A61K *6/08*

U.S. Cl. 433—217 **3 Claims**

1. A therapeutic method of treating gingival and periodontal tissues of the mouth comprising the steps of:

(a) drying the area to be treated;

(b) providing a material comprised of calcium hydroxide, ethyltoluene sulfonamide, zonc stearate, methyl salcylate, 1,3 butylene glycol and titanium oxide-calcium sulfate filler;

(c) applying the material to the area to be treated; and

(d) allowing the material to harden.

4,375,969

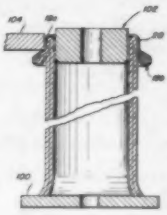
METHOD FOR FORMING A COMPOSITE CONTAINER INCLUDING A REVERSELY CURLED BODY MEMBER

Stephen E. Woerz, Florissant, Mo., assignor to Boise Cascade Corporation, Boise, Id.

Division of Ser. No. 95,528, Nov. 19, 1979, Pat. No. 4,299,350. This application Feb. 27, 1981, Ser. No. 238,960

Int. Cl.³ B31B *17/60*

U.S. Cl. 493—158 **3 Claims**



1. A method of forming a composite container including a vertically arranged tubular composite body wall, and a synthetic plastic end closure member, comprising the steps of

(a) reversely curling outwardly the upper end of the composite body wall member; and

(b) radially inwardly compressing only the outer circumferential surface of the uppermost extremity of the reversely curled portion toward the adjacent body wall member while simultaneously maintaining the inner circumferential wall surface thereof in a cylindrical configuration, thereby to cause the lower end of the reversely curled portion to project radially outwardly and thereby define an annular locking projection.

4,375,970

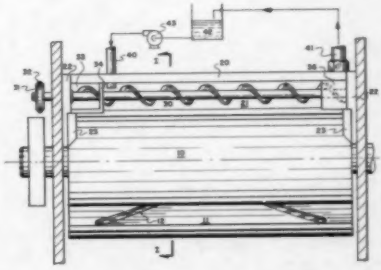
CONVERTING MACHINE GUM BOX

Joseph M. Murphy, Wilbraham, and Frank P. Sulewski, Jr., Southwick, both of Mass., assignors to Westvaco Corporation, New York, N.Y.

Filed Oct. 6, 1980, Ser. No. 193,908

Int. Cl.³ B05C *1/08, 11/10*

U.S. Cl. 493—337 **2 Claims**



1. A rotary converting machine gum box comprising back, opposite end and bottom wall portions disposed longitudinally adjacent an adhesive metering roll, said bottom wall portion also including a doctor blade for the surface of said metering roll, said wall portions and metering roll surface defining a fluid adhesive pond enclosure, the improvement comprising:

A. An adhesive circulation system including first pump means for delivery of adhesive to one end of said pond enclosure from an atmospherically enclosed reservoir vessel and second pump means to induce withdrawal of

adhesive from the other end of said pond enclosure to said reservoir vessel;

B. A rotatively driven screw shaft positioned between said gum box ends axially parallel with said metering roll, said screw shaft having a major diameter helix element with a lead advancing from said one wall end to said other wall end to positively induce adhesive flow within said gum box from one end to the other in flooding contact with said metering roll surface; and,

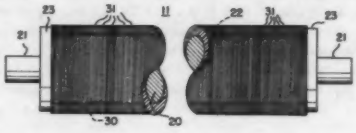
C. Sealing wall means defining a seal chamber for isolating a screw shaft penetration region of said one end wall from said pond enclosure, said sealing wall having an aperture therein approximately the same as said major helix diameter to receive said screw shaft therethrough whereby rotation of said screw shaft purges adhesive from said shaft penetration region of said one end wall.

4,375,971

FOLD ROLLER

Richard J. Moll, c/o Dick Moll and Sons, 1957 Pioneer Rd., Bldg. E, Huntingdon Valley, Pa. 19006

Continuation-in-part of Ser. No. 178,861, Aug. 18, 1980, abandoned. This application Jul. 29, 1981, Ser. No. 288,035
Int. Cl.[3] B65H *45/04, 45/18, 45/14*
U.S. Cl. 493—442 5 Claims



1. In a paper folding apparatus having at least one folding roll couple wherein at least one of the rollers comprises

a core,

a resilient covering of urethane secured to said core, with a durometer in the range from 60 to 70, and

a plurality of ribs with flat faces separated by helical grooves on the peripheral surface of said roller.

4,375,972

HETEROGENEOUS CHEMILUMINESCENT IMMUNOASSAYS UTILIZING METALLO PORPHYRIN TAG

Peter S. Forgione, and William A. Henderson, Jr., both of Stamford, Conn., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Division of Ser. No. 85,601, Oct. 17, 1979, abandoned. This application Dec. 7, 1981, Ser. No. 328,007

Int. Cl.³ G01N *33/54, 33/58, 21/76*

U.S. Cl. 436—531 **9 Claims**

1. A heterogeneous immunoassay method for detecting or determining a suspected immunologically active substance in a sample comprising:

(a) contacting said sample with a conjugate comprising an immunologically active compound having a metallo porphyrin tag, said conjugate forming a complex with the substance being assayed;

(b) contacting the complex resulting from (a) with a chemiluminescent reactant; and

(c) measuring the amount of light resulting from (b).

4,375,973

ADDITIVE COMBINATIONS AND FUELS CONTAINING THEM

Albert Rossi, Warren; David H. Rehrer, Westfield; Alexis A. Oswald, Mountainside, all of N.J.; Kenneth Lewtas, Wantage, and Robert D. Tack, Abingdon, both of United Kingdom, assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Nov. 20, 1980, Ser. No. 208,721

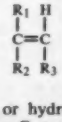
Claims priority, application United Kingdom, Nov. 23, 1979, 7940510

Int. Cl.³ C10L *1/16, 1/18*

U.S. Cl. 44—62 **12 Claims**

1. A wax-containing petroleum fuel oil comprising a major proportion of a distillate oil boiling in the range of 120° to 500° C., which fuel oil has been improved in its low temperature flow properties, containing in the range of about 0.001 to 0.5 wt.%, based on the weight of the total composition, of a flow improving combination of:

(A) one part by weight of an oil-soluble ethylene backbone distillate flow improving polymer having a number average molecular weight in the range of about 500 to 50,000 which is a copolymer consisting essentially of 3 to 40 molar proportions of ethylene per molar proportion of unsaturated ester of the general formula:



wherein R_1 is methyl or hydrogen, R_2 is —$OOCR_4$ or —$COOR_4$ where R_4 is a C_1 to C_{28} alkyl group and R_3 is hydrogen or —$COOR_4$;

(B) 0.1 to 10 parts by weight of an oil soluble hydrocarbon polymer having a number average molecular weight in the range of 10^3 to 10^6 selected from the group consisting of: copolymers comprising about 15 to 90 wt.% ethylene and 10 to 85 wt.% C_3 to C_{30} olefin; hydrogenated polymer consisting essentially of styrene or alkylated styrene with conjugated diene selected from the group consisting of butadiene, isoprene, piperylene and 2,3-dimethyl butadiene, or mixtures thereof; polymers consisting essentially of polyisobutylene; hydrogenated conjugated diene polymers consisting essentially of 1,3-butadiene, isoprene, 1,3-pentadiene, or 1,3-dimethyl butadiene, or mixtures thereof; and

(C) 0.1 to 10 parts by weight of polar oil soluble compound selected from the group consisting of:

(1) oil soluble nitrogen compounds containing a total of 30 to 300 carbon atoms and having at least one straight chain alkyl segment of 8 to 40 carbons and selected from the class consisting of amine salts and/or amides of hydrocarbyl carboxylic acids or anhydrides having 1 to 4 carbonyl groups; and

(2) compounds, other than (1) above, of the formula RX wherein R is an oil solubilizing hydrocarbon group of 8 to 150 carbon atoms and X is selected from the group consisting of carboxylate, sulfonate, sulphate, phosphate, phenate, and borate groups.

4,375,974

DETERGENT COMPOSITIONS, THEIR MANUFACTURE AND THEIR USE AS ADDITIVES FOR FUELS

Paul Maldonado, Saint Symphorien D'Ozon; Choua Cohen, and Bernard Sillion, both of Lyons, all of France, assignors to Institut Francais du Petrole, Rueil-Malmaison and Societe Elf France, Paris, both of, France

Filed Jul. 8, 1981, Ser. No. 281,532

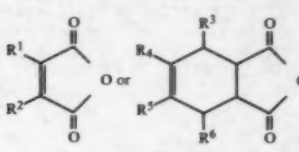
Claims priority, application France, Jul. 8, 1980, 80 15228

Int. Cl.³ C10L *1/18, 1/22*

U.S. Cl. 44—63 **16 Claims**

1. A detergent fuel additive composition prepared by a process comprising the steps of:

(a) partially condensing a linear or branched C_{10-200} olefin with an unsaturated anhydride having the formula



wherein R^1 and R^2 are each independently H or C_{1-30} hydrocarbyl; R^4 and R^5 are each independently H or C_{1-5} hydrocarbyl; and R^3 and R^6 are each H or together form an endo C_{1-2} alkylene bridge; wherein 1–2.5 moles of unsaturated anhydride per mole of olefin are heated at a temperature of 140°–250° C., the reaction being interrupted when 20–80% of the anhydride has been converted; and

(b) reacting the resultant complex mixture from step (a), containing residual unconverted anhydride, at 120°–200° C., with a polyamine having the formula H_2N——$CH_2)_n NH]_m R^7$, wherein R^7 is a C_{6-30} aliphatic group; n is an integer from 2 to 5; and m is an integer from 1 to 10; wherein 0.9–1.2 mole of said polyamine is used per mole of said unsaturated anhydride introduced into step (a), and removing the resultant water.

4,375,975

CENTRIFUGAL SEPARATOR

James J. McNicholas, East Brunswick, N.J., assignor to MGI International Inc., Morris Plains, N.J.

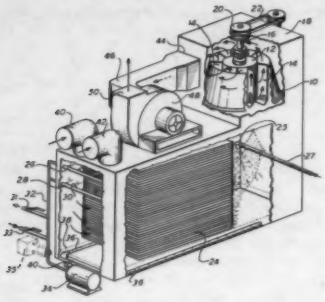
Filed Jun. 4, 1980, Ser. No. 156,638

Int. Cl.³ B01D *45/00*

U.S. Cl. 55—1 **2 Claims**

2. A method for removing fluid denser constituents from a fluid stream comprising deflecting said fluid stream to separate large fluid denser constituents from said stream, rotating said fluid stream in a rotating duct having an outer wall tapered in the direction of fluid flow and containing a plurality of substantially planar and parallel internal baffles extending radially inside said duct to said outer wall and being parallel to the axis of rotation of said duct, said stream being rotated at a speed of rotation sufficient to impel fluid denser constituents outwardly in said fluid to collect on said outer wall and causing said constituents by the centrifugal force exerted thereon to flow in

a direction generally opposite to the direction of flow of said fluid stream to a point removed from the boundaries of said



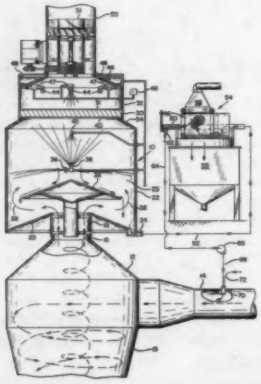
fluid stream, and recovering a constituent-depleted fluid and said fluid denser constituents.

4,375,976

METHOD AND APPARATUS FOR RECOVERING PARTICULATE MATTER FROM GAS STREAM

George R. Potter, 784 Beaver Creek Rd., Coos Bay, Oreg. 97470

Filed Feb. 27, 1981, Ser. No. 239,004
Int. Cl.³ B01D *47/06, 47/12, 1/20*
U.S. Cl. 55—85 **10 Claims**



1. A method of removing and collecting combustible particulate matter, in a substantially dry form, from a stream of gas containing said particulate matter, comprising:

(a) passing said stream of gas through a dry primary separator;

(b) collecting a majority of said particulate matter from said stream of gas in said primary separator;

(c) thereafter conducting said stream of gas into a secondary separator;

(d) collecting additional particulate matter from said stream of gas in said secondary separator;

(e) washing said additional particulate matter from said secondary separator with a liquid and thereby forming a fluid mixture of said additional particulate matter and said liquid;

(f) removing said fluid mixture from said secondary separator;

(g) separating a minor portion of said liquid and a major portion of said additional particulate matter from said fluid mixture and forming a slurry thereof;

(h) introducing said slurry into said stream of gas at a location upstream from entry of said stream of gas into said primary separator and thereby transferring liquid from said slurry to other particulate matter contained in said stream of gas; and

(i) thereafter collecting said additional particulate matter of said slurry and said other particulate matter from said stream of gas.

7. Apparatus for removing combustible particulate matter in a substantially dry form from a stream of gas, comprising:

(a) dry primary separator means for removing a majority of said particulate matter from said stream of gas;

(b) infeed conduit means for directing said stream of gas into said primary separator means;

(c) secondary separator means for removing additional particulate matter from said stream of gas and having particulate collecting surfaces for collecting said additional particulate matter;

(d) washing means in said secondary separator means for washing said additional particulate matter from the collecting surfaces of said secondary separator means with a liquid;

(e) drain means in said secondary separator means for collecting said additional particulate matter and said liquid as a fluid mixture;

(f) means connected to said drain means for separating a minor portion of said liquid and a major portion of said additional particulate matter from said fluid mixture and forming a slurry thereof;

(g) means for delivering said slurry from said means for separating to said infeed conduit means; and

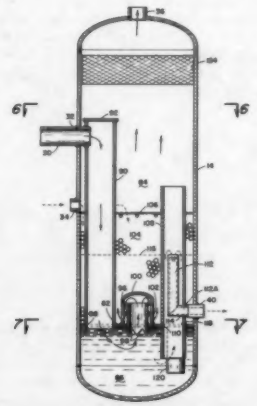
(h) means located in said infeed conduit means for introducing said slurry into said infeed conduit means.

4,375,977

SYSTEM OF GAS DEHYDRATION USING LIQUID DESICCANTS

Joseph D. Honerkamp, and Harold O. Ebeling, both of Tulsa, Okla., assignors to Latoka Engineering, Inc., Tulsa, Okla.

Filed Jan. 23, 1981, Ser. No. 227,998
Int. Cl.³ B01D *53/20*
U.S. Cl. 55—234 **5 Claims**



1. A separator for extracting liquid from gas comprising:

an upright vessel having a gas inlet, a gas outlet, a liquid desiccant inlet and a liquid outlet;

a vertical mixing conduit positioned within the upper interior portion of said separator vessel, the upper end of the mixing conduit being open and the lower end being connected to said vessel gas outlet;

a liquid desiccant injection nozzle having the outlet end within the upper end of said mixing conduit and the inlet end connected to said vessel desiccant inlet, the diameter

of the nozzle being less than the internal diameter of the mixing conduit whereby gas flows from within the vessel into the upper open end of the mixing conduit;

means in the lower end of the vessel to collect liquid dropout from gas within the vessel and to discharge the liquid through said liquid outlet, the co-mingled gas and liquid desiccant passing out of the vessel through said gas outlet.

4. An absorber for contacting gas having water entrained therein with liquid desiccant comprising:

an upright vessel having a gas inlet intermediate the top and bottom, a gas outlet adjacent the top and a liquid outlet adjacent the bottom;

a horizontal plate separating the interior of the vessel into an upper and a lower chamber;

a vertical gas conduit connecting at its upper end with said gas inlet and passing downwardly through an opening in said plate, the lower end terminating below said plate;

means of introducing recycled liquid desiccant into said vessel;

a plurality of short length vertical cylindrical members each supported in an opening in said plate, the lower end of each extending below said plate and the upper end of each extending above said plate, the lower edge of each cylindrical member being defined by a series of notches through which gas flows in passing from the vessel lower to the upper chamber;

a cap covering the upper portion of each of said cylindrical members, the internal diameter of the caps being greater than the external diameter of the cylindrical members, the caps having passageways therein below the upper ends of the cylindrical members whereby gas flowing upwardly through said cylindrical members flows downwardly in the annular area between the exterior of the cylindrical members and the interior of the caps and out the cap passageways, said vessel liquid desiccant outlet being arranged to maintain a level of desiccant in said vessel substantially above said cap passageways, said vessel gas inlet being above the desiccant level;

packing means within said vessel extending from said plate upwardly to a level above said desiccant level;

a vertical discharge conduit within said vessel having an open top and bottom, the conduit being received in an opening in said plate, the bottom of the conduit terminating within said vessel lower chamber above the vessel bottom and the upper end terminating within said vessel upper chamber above said packing;

a vertical pipe positioned within said discharge conduit of external diameter less than the internal diameter of said discharge conduit, the upper open end of the pipe being below the upper end of the discharge conduit, the discharge conduit having an opening in the sidewall thereof; and

a horizontal pipe received in said opening in said conduit, the horizontal pipe being connected at its inner end to the lower end of said vertical pipe and the other end being connected to said vessel liquid outlet;

whereby gas entering said vessel flows downwardly in said gas conduit into said lower chamber and upwardly through said plurality of cylindrical members and out through said cap passageways, thence upwardly through said packing to said gas outlet, and excess liquid flows in the lower end of said vertical discharge conduit and into the top of said vertical pipe and thence out of said vessel.

4,375,978

LIGHTWEIGHT OUTLINE MOLD WITH LOW THERMAL INERTIA FOR SHAPING GLASS SHEETS

Thomas J. Reese, Sarver; Stephen J. D. Jursa, Saxonburg, and Dean L. Thomas, Glenshaw, all of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Jul. 1, 1981, Ser. No. 279,411
Int. Cl.³ C03B *23/025*
U.S. Cl. 65—287 **7 Claims**

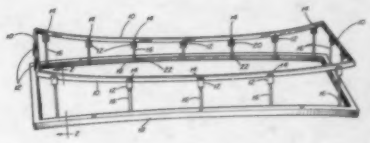
1. An outline mold for bending glass sheets, comprising:

a shaping rail disposed in edgewise relation so that its upper edge surface conforms in elevation and outline to a configuration similar to and slightly smaller than the periphery of the glass sheets after bending, said shaping rail having a height of less than about 1 inch (2.54 centimeters) and a thickness of about 0.090 inch (2.3 millimeters) to provide reduced thermal inertia of said shaping rail;

a horizontal disposed structurally stable reinforcing frame;

a plurality of upright rods welded at their lower end portion to said reinforcing frame and extending upwardly therefrom;

a reinforcing tab for each of said rods said tab having its longest dimension extending approximately vertically and



welded at its lower portion only to the upper portion of its associated one of said rods, said tab having a major surface contacting side surface of said shaping rail and being complementary therewith; and

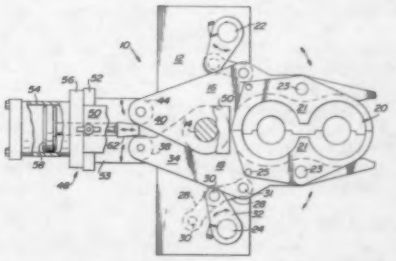
fastening means of the type capable of securement without requiring localized heating for securing the upper portion of each of said reinforcing tab to said shaping rail at a fastening point spaced from adjacent fastening points to prevent distortion of the frame.

4,375,979

GLASS FORMING APPARATUS

Mark C. Newkirk, and Albert J. Tamagni, both of Vineland, N.J., assignors to Maul Technology Corporation, Millville, N.J.

Filed Nov. 19, 1981, Ser. No. 322,800
Int. Cl.³ C03B *9/00*
U.S. Cl. 65—360 **12 Claims**



1. Glass forming apparatus comprising first and second arms for holding a mold, said arms being pivotable about a pivot shaft between a closed position and an open position, first motor means connected to the arms for pivoting the arms between an open and closed position, means independent of said first motor means for applying a clamping force to prevent movement by the arms toward an open position, said means for applying a clamping force including an extension on each arm projecting beyond the pivot shaft and a second motor means for moving the extensions away from each other in timed relationship with movement of the arms to thereby apply a clamping force to the mold holder arms when the arms are in their closed position.

4,375,980

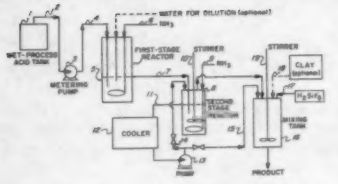
PRODUCTION OF SUSPENSION FERTILIZERS FROM ORTHOPHORPHORIC ACID

Thomas M. Jones, and John M. Stinson, both of Sheffield, Ala., assignors to Tennessee Valley Authority, Muscle Shoals, Ala.

Continuation of Ser. No. 947,684, Oct. 2, 1978, now Defensive Publication No. T986,001. This application Mar. 19, 1979, Ser. No. 21,879

Int. Cl.[3] C05B *7/00*

U.S. Cl. 71—34 4 Claims



PRODUCTION OF AMMONIUM PHOSPHATE SUSPENSION FERTILIZERS BY A TWO-STAGE CONTINUOUS AMMONIATION PROCESS

1. A process for the production of suspension-type fertilizers from wet-process phosphoric acid and ammonia, which suspensions have high plant food contents, excellent flow properties, low viscosities, good storage properties, and do not contain settled crystals after exposure to substantial vibration, which process comprises the steps of:

(1) simultaneously adding in predetermined proportions a stream of ammonia, of water, and of wet-process phosphoric acid to a first-stage reactor to effect a partially ammoniated feed phosphoric acid material therein having a $N:P_2O_5$ weight ratio ranging from about 0.15 to about 0.28;

(2) removing at least a portion of the resulting partially ammoniated acid from said first-stage reactor and introducing same into a second-stage reactor, together with a stream of additional ammonia in predetermined proportions to effect an ammoniated phosphoric acid material therein having a $N:P_2O_5$ weight ratio ranging between about 0.26 to about 0.34;

(3) removing at least a portion of said ammoniated material from said second-stage reactor and subsequently introducing same into cooling means wherein said ammoniated material is cooled to a temperature in the range from about 80° F. to about 150° F.;

(4) subsequently removing the resulting ammoniated material from said cooling means and introducing same, at a temperature in the range from about 80° F. to about 150° F., to a mixing vessel, together with from about 0.5 percent to about 2 percent by weight clay and from about 0.1 percent to about 0.5 percent by weight fluosilicic acid, said fluosilicic acid based on the weight of the resulting stable suspension; and

(5) removing the resultant stable suspension from said mixing vessel to storage.

4,375,981

METHOD FOR CONTROLLING WEED GROWTH USING HERBICIDALLY 5-(2-CHLORO-4-TRIFLUOROMETHYL)-, OR (4-TRIFLUOROMETHYL OR 2,6-DICHLORO-4-TRIFLUOROMETHYLPHENOXY)-2-NITRO-SUBSTITUTED CARBONYL OXIME-O-ALKYL ETHERS

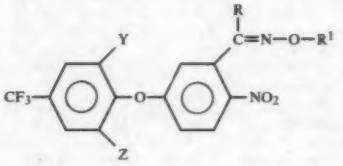
Dennis K. Krass, Canal Fulton, Ohio, assignor to PPG Industries, Inc., Pittsburgh, Pa.

Division of Ser. No. 38,746, May 14, 1979, Pat. No. 4,263,227. This application Nov. 21, 1980, Ser. No. 208,966

Int. Cl.[3] A01N *35/10*; C07C *131/00*

U.S. Cl. 71—121 5 Claims

1. In a method of controlling weed growth wherein a herbicidal amount of a herbicide is applied to the weeds subsequent to their emergence from the growth medium wherein the improvement resides in using as the herbicide a compound represented by the formula:



wherein:

Y and Z are independently hydrogen or chlorine;

R is hydrogen or alkyl of up to 3 carbon atoms; and

R^1 is alkyl of up to 4 carbon atoms.

4,375,982

METHOD FOR PURIFYING A DUST-CONTAINING HOT GAS, MORE PARTICULARLY COAL GAS PRODUCED FROM COAL FED INTO A STEEL OR IRON BATH REACTOR

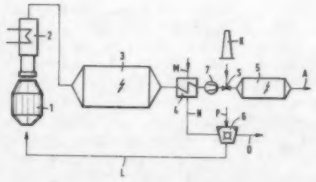
Manfred Chitil, Krefeld-Bockum, Fed. Rep. of Germany, assignor to Klockner-Werke AG, Duisburg, Fed. Rep. of Germany

Filed Aug. 28, 1981, Ser. No. 297,256

Claims priority, application Fed. Rep. of Germany, Oct. 31, 1980, 3041010

Int. Cl.[3] C21B *3/04*

U.S. Cl. 75—25 6 Claims



1. In a method of purifying a hot dust-containing coal gas produced from coal fed into a steel or iron bath reactor and issuing therefrom at a termperature of about 1500° C., the improvement comprising the steps of cooling down the gas to be purified to a first temperature of about 200° to 500° C., first purifying the gas at said first temperature in a first electrofilter, further cooling down the purified gas to a second temperature of about 20° to 100° C., and thereafter again purifying the gas at said second temperature in a second electrofilter for dedusting the gas to a residual dust content which is negligible for a gas piping system.

4,375,983

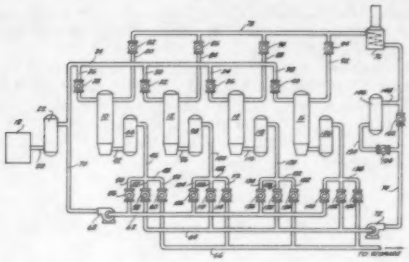
METHOD OF MAKING SPONGE METAL

Juan Celada; Patrick W. MacKay; Juan F. Price-Falcon, and Ricardo Viramontes-Brown, all of Garza Garcia, Mexico, assignors to Hylsa, S.A., Monterrey, Mexico

Continuation of Ser. No. 33,693, Apr. 26, 1979, abandoned. This application Feb. 13, 1981, Ser. No. 234,317

Int. Cl.³ C21B *13/02*

U.S. Cl. 75—35 7 Claims



1. In a method for the batchwise reduction of iron ore to sponge iron in a multiple unit reactor system of the type in which separate fixed beds of iron-bearing material are simultaneously treated in at least one cooling reactor and at least two reduction reactors and a reducing gas composed largely of carbon monoxide and hydrogen is used to cool the iron-bearing material in said cooling reactor and thereafter to reduce the iron-bearing material in said reduction reactors, the improvement which comprises causing a stream of said reducing gas to pass through the fixed bed of reduced iron oxide in said cooling reactor and then cooling it, recirculating a portion of the cooled reducing gas to the cooling reactor, heating the remainder of the cooling reactor effluent gas in a gas superheater without combustion of said effluent gas to a temperature of at least 900° C. to increase its stability, causing the thus heated cooling reactor effluent gas to flow in parallel through the fixed beds of metal-bearing material in said reduction reactors, cooling the effluent gas from the reduction reactors to remove water therefrom and reheating at least a portion of the cooled effluent gas from the readuction reactors and recirculating it to the reduction reactors.

4,375,984

RECOVERY OF GOLD FROM BROMIDE ETCHANTS

Surinder K. Bahl, 670 Talowood Dr., Dayton, Ohio 45430, and Gale L. Leach, 1315 Carpenter Dr., Bellbrook, Ohio 45305

Filed Aug. 14, 1980, Ser. No. 178,245

Int. Cl.³ C22B *11/04*; B44C *1/22*

U.S. Cl. 75—97 A 2 Claims

1. A method of recovering gold from gold coated materials comprising the steps of contacting a gold coated material with an aqueous etchant solution comprising an alkali metal bromide and bromine for a time sufficient to etch away the gold layer, adding a water soluble alcohol to the solution, adjusting the pH of the solution to 13 or above to cause precipitation of metallic gold from the solution, and recovering the precipitated gold.

2. The method of claim 1 including the steps of recovering the precipitate, adding a strong mineral acid to dissolve metals other than gold in said precipitate, and recovering the remaining gold.

4,375,985

SPENT OIL SHALE COMPOSITIONS AND USE

Maurice Guillaud, La Frette sur Seine, France, and Paul H. Bissery, Golden, Colo., assignors to Standard Oil Co. (Indiana) and Gulf Oil Corp., both of Chicago, Ill.

Filed Oct. 15, 1980, Ser. No. 197,246

Int. Cl.³ C04B *19/04*

U.S. Cl. 106—84 17 Claims

1. A composition for use in filling spent in situ oil shale retorts and mined out areas as well as for a base for roads, comprising:

(a) combusted spent oil shale;

(b) from about 50 weight percent to about 300 weight percent water based on said combusted powdered spent oil shale; and

(c) at least one material selected from the group consisting of lignosulfonate, sodium silicate and sodium gluconate, wherein the maximum concentration of each material selected is 4 weight percent based on said combusted powdered spent oil shale.

4,375,986

PROCESS FOR TREATING LIQUIDS WASTES POSSESSING A STRONG ACIDITY

Philippe Pichat, 18, rue des Tournelles, 75004 Paris, France

Filed Apr. 8, 1981, Ser. No. 252,262

Claims priority, application France, Apr. 9, 1980, 80 07917

Int. Cl.³ C04B *1/00*

U.S. Cl. 106—85 9 Claims

1. A process for treating liquid wastes diluted in water and possessing strong acidity (pH 2) to obtain stable solid materials that are non-polluting and resistant to water leaching, the process comprising the steps of:

first, mixing the wastes with coal fly ash to form a pasty mass;

then, neutralizing the pasty mass to neutral pH; and

finally, adding a lime-containing substance to obtain a treated product.

4,375,987

ADDITIVE COMBINATION FOR HYDRAULIC CEMENT COMPOSITIONS

Bruce A. Lange, Hampstead, N.H., and Heyman C. Duecker, Chelmsford, Mass., assignors to W. R. Grace & Co., Cambridge, Mass.

Filed Nov. 23, 1981, Ser. No. 324,338

Int. Cl.³ C04B *7/355*

U.S. Cl. 106—95 17 Claims

1. An improved additive for hydraulic cement compositions which additive is readily dispersible in water and comprises an oil-in-water emulsion in which the solids portion is comprised of a major proportion of a water-insoluble, water-repelling acid component to impart water-repelling properties to said cement, from about 3 to about 30 percent by weight of a set-retarding component for said cement, emulsifier, and a stabilizing component comprising a low molecular weight non-ionic, water soluble organic compound, the amount of said stabilizing component being at least sufficient to maintain said emulsion stable when exposed to low temperature.

4,375,988

BITUMINOUS BINDER, PROCESS FOR ITS PRODUCTION AND USE

Karl-Hans Mueller, Bruchkoebel, and Walter Barthel, Langenselbold, both of Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Jul. 9, 1981, Ser. No. 281,736

Claims priority, application Fed. Rep. of Germany, Jul. 26, 1980, 3028365

Int. Cl.³ C08L *95/00*

U.S. Cl. 106—273 R 10 Claims

1. A composition comprising a bituminous material and a

silane, wherein the silane is bis-(3-[triethoxysilyl-]propyl)tetra(sulfur hydride), bis-(3-[triethoxysilyl-]propyl)tri(sulfur hydride) or bis-(3-[triethoxysilyl-]propyl)di(sulfur hydride).

4,375,989

COATED TITANIUM DIOXIDE PIGMENT AND A PROCESS FOR THE PRODUCTION OF THE SAME

Pekka I. Mäkinen, Pori, Finland, assignor to Kemira Oy, Helsinki, Finland

Filed Jul. 16, 1981, Ser. No. 283,818
Int. Cl.³ C09C *1/36*
U.S. Cl. 106—300 **7 Claims**

1. A titanium dioxide pigment, comprising a coating of an inorganic substance, the total amount of the inorganic coating, expressed as oxide, being at maximum about 0.5% of the weight of the pigment and further comprising a coating of an organic substance selected from the group comprising large-molecule fatty acids and their salts; organic silicon compounds, such as dimethyl polysiloxane; alcohols and polyalcohols.

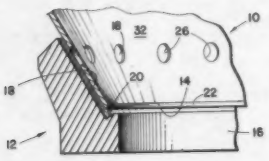
4. A process for coating a titanium dioxide pigment to improve its dispersability comprising adding to an aqueous slurry of calcinated titanium dioxide pigment an inorganic water-soluble compound or an inorganic compound which can be brought to a water-soluble form in the slurry, the inorganic compound being added to the titanium dioxide pigment slurry in an amount which, expressed as an oxide, is about 0.05–0.5% of the weight of the titanium dioxide pigment; and by depositing it on the titanium dioxide pigment, and further comprising adding to said pigment slurry an organic substance selected from the group comprising large-molecule fatty acids and their salts; organic silicon compounds, such as dimethyl polysiloxane; alcohols and polyalcohols.

4,375,990

SUGAR CENTRIFUGE BASKET ASSEMBLY AND METHOD OF ASSEMBLING SAME

Frank B. Price, Jefferson County, and Mathieu J. Vertenstein, Denver, both of Colo., assignors to Silver Engineering Works, Inc., Denver, Colo.

Filed Nov. 7, 1980, Ser. No. 204,850
Int. Cl.³ B04B *1/00, 3/00*; C13F *1/06*
U.S. Cl. 127—19 **10 Claims**



1. The combination in a basket assembly for use in a sugar centrifuge of a hollow upwradly-flared open-bottomed frustoconical member, an annular mounting flange for said frustoconical member having a frustoconical seat shaped to receive same and a first weld joining said frustoconical member and its mounting flange together in assembled relation, said frustoconical member and flange having opposed weld-receiving surfaces spaced apart to leave a portion of said seat exposed therebetween in assembled relation, said weld-receiving surfaces cooperating with one another and said exposed portion of the seat to define an inwardly-opening continuous annular groove for the reception of the weld, and said first weld when in place within the groove being effective to draw the frustoconical member into its seat so as to maintain a shrink-fit relation between it and its mounting flange.

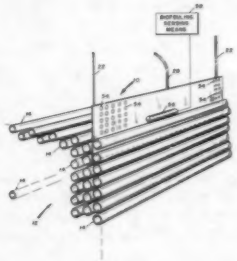
7. The method for fastening the upwardly-flared open-bottomed frustoconical element of a sugar centrifuge basket assembly within the frustoconical seat shaped to receive same in the mounting flange therefor which comprises the steps of: forming spaced annular weld-receiving surfaces bordering the open bottom of the frustoconical member and at the base of the mounting flange seat exposing a portion of the latter therebetween, and filling the annular groove thus formed with a weld effective when it shrinks to draw said frustoconical member into its seat with a wedging action.

4,375,991

ULTRASONIC CLEANING METHOD AND APPARATUS

Samuel L. Sachs, Columbia, and Freeman K. Hill, Fulton, both of Md., assignors to The Johns Hopkins University, Baltimore, Md.

Continuation-in-part of Ser. No. 963,417, Nov. 24, 1978, Pat. No. 4,244,749. This application Jan. 12, 1981, Ser. No. 224,212
The portion of the term of this patent subsequent to Jan. 13, 1998, has been disclaimed.
Int. Cl.³ B08B *3/12*
U.S. Cl. 134—1 **11 Claims**



11. A method for cleaning heat exchanger apparatuses functionally incorporating a plurality of spaced apart pipes having the external surfaces thereof in contact with a liquid which causes buildup of substances on said surfaces and reduces the heat transfer through said surfaces comprising the steps of:

positioning ultrasonic transducer means dimensioned for insertion between said spaced apart pipes within said liquid between said spaced apart pipes proximate to a surface of said pipes to be cleaned so that the energy radiated from said transducer is directed toward said surface;

applying power in pulses to said ultrasonic transducer means; and

moving said ultrasonic transducer means relative to said surface of said heat exchanger at a rate permitting the cleaning thereof.

4,375,992

APPARATUS AND METHOD FOR CLEANING RECORDED DISCS

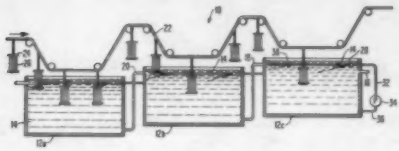
Barry N. Stevens, Indianapolis, and Lester R. Aldridge, Columbus, both of Ind., assignors to RCA Corporation, New York, N.Y.

Continuation of Ser. No. 220,126, Dec. 24, 1980, abandoned. This application Apr. 21, 1982, Ser. No. 370,533
Int. Cl.³ B08B *7/04*
U.S. Cl. 134—25.4 **11 Claims**

7. In a method for cleaning a recorded disc in which the disc is submerged in and removed from a cleaning liquid in a container with the cleaning liquid being admitted into the container at one end thereof and overflowing out of the container at the other end thereof so that the cleaning liquid flows from the one end of the container to the other end, and in which the discs are moved through the liquid in the container toward said one end of the container, the improvement comprising

providing an additional flow of the liquid along a path sub-

stantially parallel to and slightly below the surface of the cleaning liquid in a direction toward the other end of the



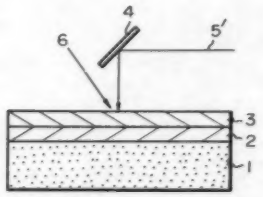
container and across the area of the cleaning liquid through which the disc passes as it is removed from the cleaning liquid.

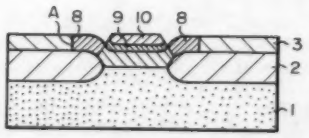
4,375,993

METHOD OF PRODUCING A SEMICONDUCTOR DEVICE BY SIMULTANEOUS MULTIPLE LASER ANNEALING

Haruhisa Mori; Hajime Kamioka; Motoo Nakano, all of Yokohama, and Nobuo Sasaki, Kawasaki, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Apr. 8, 1981, Ser. No. 252,216
Claims priority, application Japan, Apr. 9, 1980, 55-45694
Int. Cl.³ H01L *21/263, 21/265, 29/78*
U.S. Cl. 148—1.5 **22 Claims**





1. A method of producing a semiconductor device which comprises the steps of:

(a) forming an insulator layer on a semiconductor substrate;

(b) forming a semiconductor layer on the insulator layer; and,

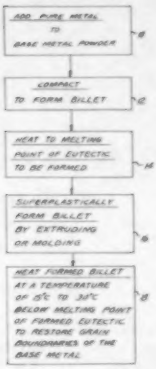
(c) then annealing the semiconductor layer by means of a first laser with a second laser being applied to said insulator layer to heat said insulator layer while the first laser is applied to the semiconductor layer.

4,375,994

ALTERNATE METHOD FOR INDUCING SUPERPLASTIC PROPERTIES IN NONSUPERPLASTIC METAL AND ALLOY POWDERS

Kamal E. Amin, Columbia, Md., assignor to The Bendix Corporation, Southfield, Mich.

Filed Mar. 24, 1982, Ser. No. 361,280
Int. Cl.³ C22F *1/00*
U.S. Cl. 148—11.5 P **18 Claims**


ADD PURE METAL TO BASE METAL POWDER
COMPACT TO FORM BILLET
HEAT TO MELTING POINT OF EUTECTIC TO BE FORMED
SUPERPLASTICALLY FORM BILLET BY EXTRUDING OR MOLDING
HEAT FORMED BILLET AT A TEMPERATURE OF 5°C TO 30°C BELOW MELTING POINT OF FORMED EUTECTIC TO RESTORE GRAIN BOUNDARIES OF THE BASE METAL

1. A method for superplastically forming nonsuperplastic metallic materials, comprising the steps of:

adding a predetermined quantity of pure metal to a nonsuperplastic metallic material powder, said pure metal capable of alloying with said nonsuperplastic metallic material to form a eutectic having superplastic properties;

compacting said nonsuperplastic material powder with said added pure metal to form a billet;

heating said billet to the melting point of said eutectic to form said eutectic proximate the grain boundaries of the nonsuperplastic material powders;

superplastically forming said billet to the desired shape utilizing the superplastic properties of said formed eutectic; and

heating said billet at a temperature between 15° C. and 30° C. below the melting point of said formed eutectic to dissolve said pure metal into said nonsuperplastic material and restore the grain boundaries of the nonsuperplastic material.

4,375,995

METHOD FOR MANUFACTURING HIGH STRENGTH RAIL OF EXCELLENT WELDABILITY

Kazuo Sugino; Hideaki Kageyama, and Hiroki Masumoto, all of Kitakyushu, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Continuation-in-part of Ser. No. 37,146, May 8, 1979, abandoned. This application Oct. 30, 1980, Ser. No. 202,195
Claims priority, application Japan, May 12, 1978, 53-56330
Int. Cl.³ C21D *8/00, 9/04*
U.S. Cl. 148—12 R **3 Claims**

1. A method for manufacturing high strength rail of excellent weldability comprising the steps of:

a. hot rolling a steel into a rail, said steel containing 0.65 to 0.85% of C, 0.50 to 1.20% of Si, 0.50 to 1.50% of Mn, 0.005 to 0.050% of Al, 0.004 to 0.050% of one or both of Nb and Ti, and the balance being iron and unavoidable impurities,

b. cooling the hot rolled rail to a temperature less than the point Ar_1 to cause the cooled rail complete cooling transformation,

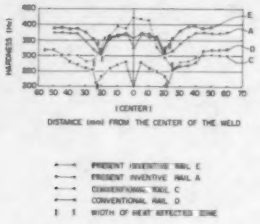
c. reheating the surface layer portion of the head of the

transformed rail to a temperature not less than 850° C. to obtain an austenite structure,

d. quenching said reheated portion of the rail with a gas from 800° C. to 600° C. in from 15 o 250 seconds,

e. gradually cooling down said rail thus quenched from 600° C. to 450° C. in a period of from 30 to 1000 seconds with a gas, during which period pearlite transformation is substantially started and completed,

f. subjecting said rail thus gradually cooled down to a subsequent quenching treatment or a subsequent air-cooling



treatment with gas, liquid or combination thereof to below 450° C.,

whereby the surface layer of the head of the thus treated rail to a depth of 10 mm or more is transformed to a fine pearlite structure having a tensile strength of more than 120 kg/mm^2, a reduction of area more than 40% and the surface hardness of said treated rail at said surface layer being H_V 350 or more, and

said excellent weldability being such that when said rail head is welded, the welded portion having properties which are almost the same as those of the non-welded portion.

4,375,996

RARE EARTH METAL-CONTAINING ALLOYS FOR PERMANENT MAGNETS

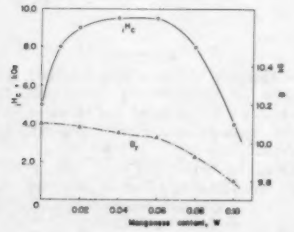
Yoshio Tawara; Tetsuichi Chino, and Ken Ohashi, all of Takefu, Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed May 20, 1981, Ser. No. 265,367

Claims priority, application Japan, May 23, 1980, 55-68546

Int. Cl.^{3} C04B *35/00*

U.S. Cl. 148—31.57 **1 Claim**



1. A rare earth metal-containing alloy for permanent magnets having a composition expressed by the formula

$$Sm_{1-\alpha}Ce_{\alpha}(Co_{1-x-y-u-v-w}Fe_xCu_yTi_uZr_vMn_w)_z,$$

wherein the subscripts are each a numerical value as defined by:

$0.1 \leqq \alpha \leqq 0.90$;

$0.10 \leqq x \leqq 0.30$;

$0.05 \leqq y \leqq 0.15$;

$0.002 \leqq u \leqq 0.03$;

$0.002 \leqq v \leqq 0.03$;

$0.005 \leqq w \leqq 0.08$,

with the proviso that $0.01 \leqq u+v+w \leqq 0.10$; and

$5.7 \leqq z \leqq 8.1$.

4,375,997

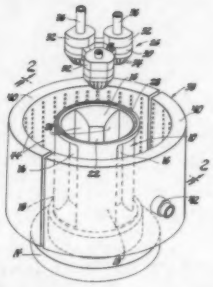
METHOD OF INDUCTIVELY HEAT TREATING A THIN-WALLED WORKPIECE TO CONTROL DISTORTION

Donald L. Matz, Saginaw, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed May 13, 1982, Ser. No. 378,012

Int. Cl.^{3} C21D *1/10*

U.S. Cl. 148—150 **5 Claims**



4. A method of induction heating and quench hardening a surface layer of a thin-walled portion of a hardenable steel body while controlling thermal distortion of the body, comprising

passing an inductor member along the body in close proximity to the surface layer of the thin-walled portion that is to be hardened, the inductor being activated when passing over the selected surface to progressively heat shallow elements of the layer above the austenitic transformation temperature until at least a portion of the surface layer has been so heated,

simultaneously cooling the body with a fluid quenchant at least from the opposite side to harden the heated elements, the said progressive heating with cooling producing a dimensional distortion in the treated surface of the part that increases in the direction of passage of the inductor,

substantially immediately reversing the direction of passage of the inductor and activating the inductor to progressively heat, with continued cooling, at least a portion of the same surface from the opposite direction so as to leave the surface of the thin-walled portion in a hardened condition and to undo to a desired extent distortion introduced in the preceding step.

4,375,998

METHOD AND APPARATUS FOR COOLING METAL STRIP WOUND INTO COILS

Heinrich Bohnenkamp, Neuss-Uedesheim, Fed. Rep. of Germany, assignor to SMS Schloemann-Siemag Aktiengesellschaft, Dusseldorf, Fed. Rep. of Germany

Filed Apr. 3, 1981, Ser. No. 250,841

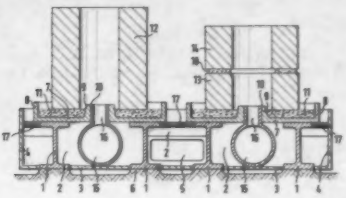
Claims priority, application Fed. Rep. of Germany, Apr. 15, 1980, 3014362

Int. Cl.^{3} C21D *1/62*

U.S. Cl. 148—157 **7 Claims**

1. A method of cooling a coil of metal strip, in which said coil is placed, with its axis substantially vertical, on a porous support with the lower face of the coil standing on the support, introducing a stream of water into the interior of the coil to fill the said interior, a minor proportion of the water flowing from

the coil interior along the said lower face by way of the said support, and a major proportion of the water flowing over the



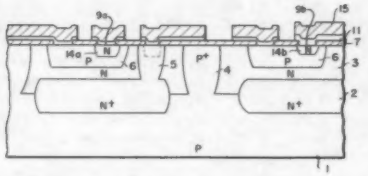
upper face of the coil and over the peripheral surface of the coil.

4,375,999

METHOD OF MANUFACTURING A SEMICONDUCTOR DEVICE

Kazumasa Nawata, Kawasaki, and Hirokazu Suzuki, Yamato, both of Japan, assignors to VLSI Technology Research Association, Tokyo, Japan

Filed Feb. 13, 1981, Ser. No. 234,198
Claims priority, application Japan, Feb. 18, 1980, 55-18791
Int. Cl.³ H01L *21/223, 21/225*
U.S. Cl. 148—187 **9 Claims**



1. A method of manufacturing a semiconductor device comprising the steps of:

forming an insulating film on a selected surface of a semiconductor substrate, said film having a plurality of diffusion windows through which corresponding portions of said selected surface of the semiconductor substrate are exposed,

forming polycrystalline semiconductor layers of selectively different thicknesses on predetermined ones of said surface portions of said semiconductor substrate exposed through said plurality of diffusion windows, and

simultaneously forming diffusions regions of different junction depths in the respective portions of said semiconductor substrate associated with said exposed surface portions thereof on which said polycrystalline semiconductor layers of different thicknesses are formed by diffusing impurities into said substrate through said polycrystalline semiconductor layers of different thicknesses and the said corresponding portions of said substrate into said respective portions of said semiconductor substrate.

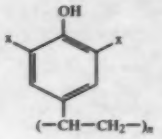
4,376,000

COMPOSITION FOR AND METHOD OF AFTER-TREATMENT OF PHOSPHATIZED METAL SURFACES

Andreas Lindert, Troy, Mich., assignor to Occidental Chemical Corporation, Warren, Mich.

Filed Nov. 28, 1980, Ser. No. 210,910
Int. Cl.³ C23F *7/08*
U.S. Cl. 148—6.15 R **12 Claims**

1. In a process of post-treating a phosphate-type conversion coated metal surface, the improvement comprising contacting said surface with a post-treatment compound selected from the group consisting of compounds and salts thereof having the following general formula:



wherein n is from about 5 to about 100;

each x is independently selected from H or CRR_1OH; and

each of R and R_1 is independently selected from aliphatic or aromatic organic moieties having from 1 to 12 carbon atoms.

4,376,001

SMOKE COMPOSITION

Uwe Krone, Hamfelde, and Klaus Moeller, Trittau, both of Fed. Rep. of Germany, assignors to Nico-Pyrotechnik Hanns-Juergen Diederichs KG., Trittau, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 942,684, Sep. 15, 1978, abandoned. This application Aug. 6, 1980, Ser. No. 175,710
Claims priority, application Fed. Rep. of Germany, Sep. 27, 1977, 2743363
Int. Cl.³ C06B *45/10*
U.S. Cl. 149—19.9 **4 Claims**

1. A smoke or fog generating composition consisting essentially of

29–33% wt. zinc oxide;

31.3–40.4% wt. ammoniumperchlorate

10–17% wt. polychloroisoprene;

3.8–14.3% wt. a buffering agent; and

6–12% wt. of a plasticizer

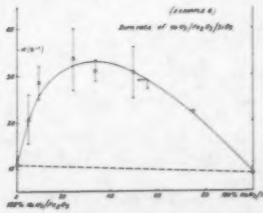
all of the components being mixed in such proportion to one another that a neutral smoke or fog is formed by said composition upon its ignition within the range of pH 5–7.

4,376,002

MULTI-INGREDIENT GAS GENERATORS

Lechoslaw A. M. Utracki, Pierrefonds, Canada, assignor to C-I-L Inc., Ontario, Canada

Filed Apr. 21, 1981, Ser. No. 255,993
Claims priority, application Canada, Jun. 20, 1980, 354511
Int. Cl.³ C06B *35/00*
U.S. Cl. 149—35 **1 Claim**



1. A solid nitrogen gas generating composition comprising a substantially stoichiometric admixture of (a) a fuel selected from the group consisting of alkali metal azides and alkaline earth metal azides, (b) a synergistically acting primary oxident component consisting of a mixture of at least two metal oxides selected from the group consisting of the oxides of iron, silicon, manganese, tantalum, niobium and tin, and (c) a residue control agent comprising a secondary metal oxide selected from the

group consisting of the oxides of titanium, aluminium and zinc or mixtures of these.

4,376,003

PROCESS FOR BONDING TOGETHER BOARDS OF WOOD WITH ROUGH OR SMOOTH SURFACE, OF SLICED OFF OR PEELED VENEER, PRODUCT USED FOR SAID BONDING AND FINAL MATERIAL OBTAINED

Gerard Elbez, Villeneuve Saint Georges, and Jean de Leeuw, Paris, both of France, assignors to Centre Technique Du Bois, Paris, France

Filed May 19, 1981, Ser. No. 264,998
Claims priority, application France, May 20, 1980, 80 11259
Int. Cl.³ B32B *5/18, 5/12*
U.S. Cl. 156—79 8 Claims

1. A process for bonding non-matching wood surfaces together which comprises the steps of

coating at least one of the non-matching surfaces with a polymer wood glue containing a hardener and a pore-generating agent,

contacting said coated surface with the other surface to be joined and

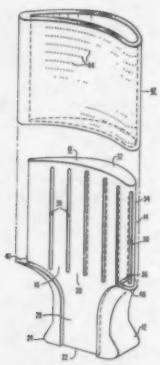
heating the assembly to a temperature to cause expansion of the pore-generating agent whereby from about 30 to 100% of expansion of the glue occurs.

4,376,004

METHOD OF MANUFACTURING A TRANSPIRATION COOLED CERAMIC BLADE FOR A GAS TURBINE

Raymond J. Bratton, Delmont, and Clarence A. Andersson, Pittsburgh, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Division of Ser. No. 3,849, Jan. 16, 1979, Pat. No. 4,311,433.
This application Oct. 15, 1980, Ser. No. 197,318
Int. Cl.³ C04B *39/00;* F01D *5/08*
U.S. Cl. 156—89 2 Claims



1. A method of fabricating a transpiration cooled combustion turbine blade having a ceramic airfoil surface comprising the steps of:

providing a blade strut member having a root portion and an airfoil portion;

forming cooling fluid flow paths in said strut member for coolant fluid flow communication between said root portion and said airfoil portion;

forming a ceramic skin about said airfoil portion by wrapping said airfoil portion with multiple layers of unfired ceramic tape having pre-punched apertures therein for registry with said coolant paths thereby permitting coolant flow from said path through all layers of said skin; and

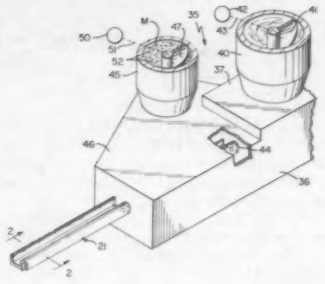
bonding by firing said ceramic tape on said airfoil portion to fuse the layers of tape together and the tape to said strut member.

4,376,005

METHOD OF MAKING HOSE

Frank A. Vitellaro, Trenton, N.J., assignor to Dayco Corporation, Dayton, Ohio

Filed Sep. 22, 1980, Ser. No. 189,973
Int. Cl.³ B31C *13/00*
U.S. Cl. 156—195 1 Claim



1. In a method of making a convoluted hose construction comprising the steps of; providing a polymeric strip having first and second connecting means defining opposite side edge portions thereof; and helically winding said strip while simultaneously connecting said first and second connecting means to define said hose construction having alternating crests and troughs; the improvement comprising the steps of, disposing an electromagnetically heatable material between said first and second connecting means, subjecting said material to electromagnetic action following said helically winding step causing heating and partial melting thereof, and cooling the partially molten material and hose construction defined by said strip thereby providing a tenacious heat fused bond between said first and second connecting means, said providing step comprising extruding said strip employing an extrusion apparatus and defining said electromagnetically heatable material by extrusion thereof simultaneously with the extrusion of said strip through an associated extrusion head assembly and as an integral part of at least one of said side edge portions of the polymeric strip and said disposing step comprises disposing said integral part between said first and second connecting means.

4,376,006

MAGNETIC RECORDING STRUCTURE

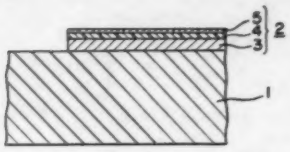
Seiichi Nishikawa, Koganei, and Makoto Honda, Kamifukuoka, both of Japan, assignors to Dai Nippon Insatsu Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 141,489, Apr. 18, 1980, Pat. No. 4,315,145, Continuation of Ser. No. 832,738, Sep. 12, 1977, abandoned. This application Jul. 24, 1981, Ser. No. 286,614
Claims priority, application Japan, Sep. 14, 1976, 51-122944; Sep. 14, 1976, 51-122945
Int. Cl.³ B32B *31/04*
U.S. Cl. 156—233 26 Claims

1. A process for producing a decoratively colored magnetic recording structure which comprises:

(1) disposing successively in laminated state on a planar support a decorative color layer, comprising an ink containing a pigment or a dye and a binder principally composed of a natural or synthetic resin, a non-magnetic light-colored metal deposition layer having a thickness between about 0.02 micron and about 0.1 micron and a dark-colored magnetic layer, the thickness of the non-magnetic

metal deposition layer being sufficient to hide the color of the magnetic layer when viewed through the color layer, and the combined thickness of the color layer and the non-magnetic metal deposition layer being less than the required thickness of the decorative color layer alone to hide the color of the magnetic layer;



(2) bonding the magnetic layer to a substrate; and

(3) peeling off the support from the structure thus obtained to expose the decorative color layer, whereby a decoratively colored magnetic recording structure is provided without impairing the magnetic characteristics of the structure.

4,376,007

MACHINE FOR PREPARING ROAD SURFACES AND FORMING TRAFFIC REGULATING LINES THEREON

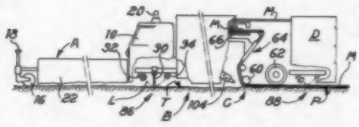
Ludwig Eigenmann, Vacallo, Canton Ticino, Switzerland

Continuation of Ser. No. 868,343, Jan. 10, 1978, abandoned. This application Mar. 31, 1981, Ser. No. 249,341

Claims priority, application Italy, Jan. 12, 1977, 19211 A/77

Int. Cl.³ E01C *23/14*

U.S. Cl. 156—497 **6 Claims**



1. A machine for forming an essentially linear traffic regulating sign on a road surface and along a given path, by applying and securing a prefabricated tape material above a predominantly thermoplastic primer layer on said surface, comprising a composite motor vehicle adapted to be driven on said road surface along said path, said vehicle carrying, in the direction of its travel for service, washing means for washing a substantially narrow strip of said surface having its center-line about at said path, drying means for drying said surface area strip, primer layer and prefabricated tape material applying and pressing means for applying a tape material above a primer layer on the said washed and dried road pavement surface area, and a structure having parts above said surface area and forming a ceiling wall and side wall forming curtain means hung from side parts of said structure to provide a confined environment above said surface area so that the latter is located and the washing, drying and applying means operate in a space sheltered from external weather and splashes.

4,376,008

APPARATUS FOR BINDING SHEETS OF PAPER

Huotari Lauri, Tammihaant, 2 B 13, Espoo 72, and Pentti J. Leskinen, Mariank 24 E44, Helsinki 17, both of Finland

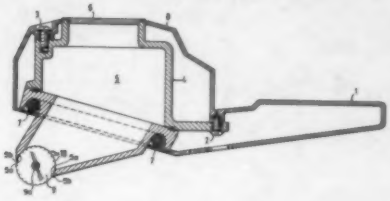
Filed May 22, 1981, Ser. No. 266,205

Claims priority, application Finland, May 22, 1980, 801670

Int. Cl.³ B42C *9/00*

U.S. Cl. 156—578 **1 Claim**

1. An improved apparatus for binding sheets of paper using hot-melt adhesive, the apparatus being of the type having a body, a handle connected to the body, the body including a compartment for containing the adhesive, heating means mounted to the body for heating adhesive in the compartment, and proportioning means for passing the adhesive to the sheets of paper to be bound, the improvement wherein the body comprises a discharge opening having opposite parallel opening edges, said discharge opening communicating with the compartment and extending along the bottom thereof, said edges having surfaces lying in a common cylinder of a selected diameter, the proportioning means comprising a roller rotatably fitted into said discharge opening formed at the bottom of the compartment and having a diameter substantially the same



as said selected diameter, said roller coinciding with said comon cylinder and being closely fitted into said discharge opening and against said opposite parallel opening edges without stuffing elements, said roller having a plurality of grooves therein extending parallel to a longitudinal axis of said roller, whereby hot-melt adhesive from said compartment enters said grooves but is otherwise removed from said roller by said opening edges with rotation of said roller, to apply adhesive only to sheets of paper contacting said roller, said roller having a center of rotation, outer ends of said parallel opening edges extending beyond said roller center of rotation with respect to said discharge opening.

4,376,009

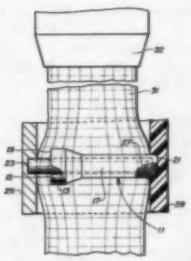
LIMP-STREAM METHOD FOR SELECTIVELY ETCHING INTEGRAL CATHODE SUBSTRATE AND SUPPORT

Peter J. Kunz, East Petersburg, Pa., assignor to RCA Corporation, New York, N.Y.

Filed Apr. 29, 1982, Ser. No. 373,052

Int. Cl.³ C23F *1/02*

U.S. Cl. 156—640 **10 Claims**



1. In a method for preparing an integral cathode substrate and support including

(a) providing a formed metallic part, said part including a cathode substrate and an integral support therefor,

(b) masking selected portions of the surface of said part with an etch-resistant mask,

(c) etching the unmasked portions of said surface to a desired depth

(d) and then removing said mask, the improvement wherein said etching step is conducted by alternately directing a

solid limp stream of liquid etchant into and out of contact with said part while permitting said liquid etchant to drain away from said part by the force of gravity.

4,376,010

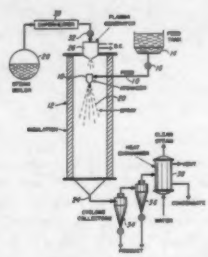
SPRAY DRYING WITH A PLASMA OF SUPERHEATED STEAM

William H. Gauvin, Beaconsfield, Canada, assignor to Noranda Mines Limited, Toronto, Canada

Filed Apr. 14, 1981, Ser. No. 254,181

Int. Cl.³ F25J *1/16*

U.S. Cl. 159—48.1 11 Claims



1. A process of drying a solution, a slurry or a solid suspension of material non-sensitive to heat comprising the steps of:
(a) providing a spray of finely divided particles of said material in a chamber;
(b) generating a plasma of superheated steam at a temperature higher than 2000° K. within said chamber so as to surround said particles of material with the superheated steam and to dry the same with said steam while they pass through said chamber; and
(c) removing the resulting product from the chamber in the form of a suspension of said particles in the superheated steam.

4,376,011

PROCESS FOR REMOVING PIGMENTS FROM WASTE PAPER

Fridolin Menschhorn, Vienna; Ernst Schönleitner, St. Aegyd; Gerhard Teufel, Pernitz, and Paul Wertheimer, Vienna, all of Austria, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Oct. 14, 1980, Ser. No. 196,605

Claims priority, application Fed. Rep. of Germany, Oct. 16, 1979, 2941783

Int. Cl.³ D21C *5/02*

U.S. Cl. 162—5 5 Claims

1. A process for removing pigment from waste paper pulp containing waste paper pulp fiber, which process comprises the steps of:
detaching pigment particles from the fiber in the waste paper pulp;
adding to the waste paper pulp a flotation composition comprising an ester of the formula
$R(OCOR^1)_m$ or $R^4OOC—R^3—COOR^4$
wherein
m is 1, 2 or 3,
R in the case of m being 1 is C_1–C_8alkyl or a group of the formula $—(CH_2CH_2O)_n—R^2$ with n being an integer of from 1 to 10 and R^2 being C_1–C_4alkyl or hydrogen,
R in the case of m being 2 is a group of the formulae

$$—CH_2\underset{\displaystyle CH_3}{\underset{|}{C}}H— \text{ or } —CH_2CH_2(OCH_2CH_2)_p—$$

P is an integer of from 0 to 10,
R in the case of m being 3 is a group of the formula

$$—CH_2\underset{|}{C}HCH_2—$$

and R^1 is C_{12}–C_{20}alkyl or C_{12}–C_{20}alkenyl, R^3 is phenylene or C_2–C_{10}alkylene and
R^4 is C_1–C_8alkyl,
and of from 0 to 10 weight %, referred to an ester of the above formulae, of a surfactant;
collecting the pigment particles by froth flotation effected with the aid of the collecting and frothing and dispersing effects provided by said flotation composition, thereby separating the pigment particles from the waste paper pulp.

4,376,012

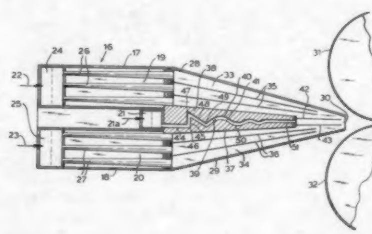
METHOD OF FORMING A MULTI-PLY WEB FROM PAPER STOCK

Jan I. Bergstrom, Beloit, Wis., assignor to Beloit Corporation, Beloit, Wis.

Continuation-in-part of Ser. No. 195,594, Oct. 9, 1980, abandoned, which is a division of Ser. No. 29,543, Apr. 12, 1979, abandoned. This application Feb. 3, 1982, Ser. No. 345,243

Int. Cl.³ D21F *11/00*

U.S. Cl. 162—123 10 Claims



1. A method of making high strength smooth surfaced paper from stock having a slurry of fibers in a liquid carrier, comprising:
delivering high consistency fibrous stock to the upstream end of a rigid stock flow passageway of substantially uniform depth throughout its length communicating at its downstream end through a slice with paper web forming surface means, and in said passageway:
a. driving the stock from a straight-on upstream machine direction axis section through an abrupt right angular juncture into and then through an elongated straight jog section which extends substantially right angularly relative to the machine direction axis of the slice chamber,
b. from said jog section driving the stock through an abrupt turn acute angle juncture with some pressure drop, and then downstreamwardly through an elongated straight slanting passageway section to and through an abrupt turn obtuse angle juncture into a sinuous passageway section, and therein
c. driving the stock through a plurality of smoothly curving sinuous loops which diminish progressively in length and height in a downstream direction
d. and from the downstream end of said sinuous section

conducting the stock through a straight-on downstream stabilizing terminal section of substantial length to the downstream end of said passageway;

and in said jog and slanting sections and said abrupt juncture vigorously agitating the stock and effecting substantially uniform distribution of the fibers in the stock, and maintaining such distribution throughout the sinuous and straight-on terminal sections to the downstream end of said passageway, while modulating and smoothing of the stock in said terminal section.

4. A method of forming a multi-ply smooth surfaced paper web from stocks having a slurry of fibers in a liquid carrier, comprising the steps of:

delivering from respective upper and lower slice chamber portions low consistency fibrous stock to a slice opening for providing upper and lower outer surface ply layers for a finished web;

maintaining fine scale fiber distributing turbulence in the low consistency stock in said upper and lower slice chamber portions;

delivering and driving a stream of high consistency fibrous stock into the upstream end of, and then through, a path in a rigid intermediate portion of the slice chamber having its downstream end adjacent to said slice opening;

in an upstream part of said path turning said stream from a straight-on section abruptly through a right angular juncture into a substantially right angular elongated straight jog section, then turning the stream abruptly at an acute angle from the downstream end of said jog section into the upstream end of a downstreamwardly elongated straight slanting section of substantial length, and from the downstream end of said slanting section abruptly at an obtuse angle turning the stream into the upstream end of a sinuous section extending downstream from said slanting section, and in said jog and slanting sections and said abrupt junctures subjecting said high consistency stock to vigorous fiber distributing agitation and attaining thorough and substantially uniform distribution of fibers in the stream;

in said sinuous section driving the high consistency stock through a plurality of smoothly curving sinuous loops which diminish progressively in length and height in a downstream direction and thereby maintaining said uniform fiber distribution;

modulating and smoothing flow of said stream in a straighton downstream terminal section of said path;

discharging said modulated and smooth high consistency stock stream from the downstream end of said terminal section and joining as an intermediate ply layer between said low consistency outer ply layers;

and causing said outer ply layers to form on said intermediate ply layer smooth outer surfaces for the multiply paper web.

4,376,013

PROCESS FOR REMOVAL OF PITCH-CONTAINING WATER AND METHOD OF COATING BELTS FOR PAPER MACHINE

Pao-Chi Wang, Strongsville, Ohio, assignor to The Lindsay Wire Weaving Company, Highland Heights, Ohio

Continuation-in-part of Ser. No. 130,215, Mar. 14, 1980, abandoned. This application Oct. 15, 1981, Ser. No. 311,660

Int. Cl.³ D21F 7/08

U.S. Cl. 162—274 **2 Claims**

1. In a forming or press section of a papermachine wherein a pulp and water mixture is deposited on a belt, the improvement wherein a forming or press belt comprises a major amount by weight of a polyester filament provided with a coating containing at least one oxyalkylene group having a molecular weight of at least 44, said oxyalkylene group being linked by groups containing a member of the class consisting of ester and amide linkages to polyester repeat units which are identical with those repeat units consitituting the crystalline segments of the internal structure of the filaments without bonding warp and weft filaments to each other so that the stiffness and air permeability of coated fabric is essentially the same as that of uncoated fabric.

2. A method of coating a polyester filament fabric for use in a papermachine, comprising,

contacting said fabric with an aqueous dispersion of a coating compound which dispersion is present in a concentration of from about 1 to about 15 percent by weight, said coating compound containing at least one oxyalkylene group having a molecular weight of at least 44, said oxyalkylene group being linked by groups containing a member of the class consisting of ester and amide linkages to polyester repeat units which are identical with those repeat units constituting the crystalline segments of the internal structure of the filaments,

air-drying said fabric at about ambient temperature,

training air-dried fabric on a pair of stretcher rolls, and,

heating said fabric while on said stretcher rolls to a temperature in the range from about 250° F. to about 420° F. for a sufficient period of time to cause co-crystallization of said compound with said polyester filament without bonding warp and weft filaments to each other so that the stiffness and air permeability of coated fabric is essentially the same as that of uncoated fabric.

4,376,014

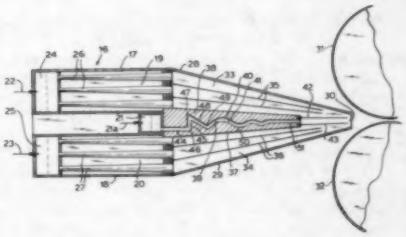
HEADBOX FOR FORMING MULTI-PLY SHEETS

Jan I. Bergstrom, Beloit, Wis., assignor to Beloit Corporation, Beloit, Wis.

Continuation-in-part of Ser. No. 195,593, Oct. 9, 1980, abandoned, which is a continuation of Ser. No. 29,543, Apr. 12, 1979, abandoned. This application Feb. 3, 1982, Ser. No. 345,244

Int. Cl.³ D21F 1/06

U.S. Cl. 162—336 **10 Claims**



1. In apparatus for making high strength smooth surfaces paper from stock having a slurry of fibers in a liquid carrier, the combination comprising:

a headbox having a high consistency stock chamber and means for delivering high consistency fibrous stock to said chamber;

a slice chamber connected to said headbox and having means downstream defining a slice opening for delivering stock to paper web forming means;

means in said slice chamber defining a rigid stock flow passageway of substantially uniform depth throughout its length communicating at an upstream end with said stock chamber and communicating at a downstream end with said slice opening, said passageway having:

a. an upstream straight-on section extending in the direction of the axis of the slice chamber, and at its downstream end, through abrupt right angular turn juncture joining the upstream end of an elongated straight jog section which extends substantially right angularly relative to the axis of the slice chamber

b. an abrupt downstream end turn acute angle juncture affording a pressure drop area and joining said jog section with a downstreamwardly extending elongated

straight slanting passageway section communicating at its downstream end with an abrupt turn obtuse angle juncture with the upstream end of

c. a sinuous passageway section having a plurality of smoothly curving sinuous loops which diminish progressively in length and height in a downstream direction, and the downstream end of said sinuous section joining

d. a straight-on flow stabilizing substantial length downstream terminal section of the passageway in which the high consistency stock stream flow is modulated and smoothed

so that paper making stock flowing through said passageway is vigorously agitated in said jog and slanting sections and in said abrupt turn junctures and has the fibers thereof substantially uniformly distributed and the fiber distribution is then substantially maintained throughout the sinuous and straight-on sections and to the downstream end of said passageway.

4,376,015

PROCESS FOR REMOVING ARSENIC FROM GREEN COKE DERIVED FROM SHALE OIL

Byron G. Spars, Mill Valley, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Aug. 14, 1981, Ser. No. 292,731
Int. Cl.³ C10B *53/00, 57/00;* C10G *17/00*
U.S. Cl. 201—17 **8 Claims**

1. A process for removing arsenic from green coke obtained by coking shale oil containing at least about 10 ppm arsenic comprising calcining the green coke at a temperature in the range of about 1500° F. to about 3000° F. for a time sufficient to reduce the arsenic content of the coke to below about 100 ppm.

4,376,016

BATHS FOR ELECTRODEPOSITION OF METAL CHALCONIDE FILMS

William R. Fawcett, and Andrzej S. Baranski, both of Guelph, Canada, assignors to TDC Technology Development Corporation, Vancouver, Canada

Filed Nov. 16, 1981, Ser. No. 320,339
Int. Cl.³ C25D *3/02, 9/08*
U.S. Cl. 204—14 N **38 Claims**

1. A bath for the electrodeposition of metal chalconides comprising an organic polar solvent having dissolved therein (a) an ionized salt of at least one metal selected from the group consisting of Cd, Pb, Hg, Cu, Bi, Co, Ni, Tl, Ag, In, and Fe, and (b) at least one chalcogen in elemental form selected from the group consisting of S and Se said solvent being characterized by having a power of intercalation into metal chalconide films electrodeposited therefrom lower than that of dimethylsulfoxide and having power for dissolving elemental chalcogen greater than that of ethylene glycol.

4,376,017

METHODS OF ELECTROLYTICALLY TREATING PORTIONS OF DIGITATED STRIPS AND TREATING CELL

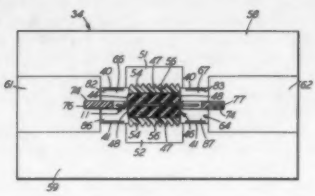
Kendall D. Urion, Raymore, Mo., assignor to Western Electric Co., Inc., New York, N.Y.

Filed Jan. 4, 1982, Ser. No. 337,053
Int. Cl.³ C25D *5/02, 17/06*
U.S. Cl. 204—15 **10 Claims**

1. A method of electrolytically treating portions of a laterally digitated strip, wherein the strip is electrically coupled to an electrical circuit, which comprises:

engaging edge features of the strip with complementary edge features of a coplanarly positioned masking belt; and

moving the strip with the engaged belt through an electrolytic bath in a treating chamber and through a gap formed by spaced treating electrodes, such that each of two oppositely outward facing surfaces of the strip are exposed to an adjacent one of the electrodes, while edge surfaces of



the strip are masked by complementary edge surfaces of the masking belt.

4,376,018

ELECTRODEPOSITION OF NICKEL

Paul A. Kohl, Chatham, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Division of Ser. No. 108,964, Dec. 31, 1979, Pat. No. 4,310,392.
This application Oct. 2, 1981, Ser. No. 307,900
Int. Cl.³ C25D *3/18*
U.S. Cl. 204—49 **6 Claims**

1. A process for electroplating a metallic substance consisting essentially of nickel comprising the step of passing current through an anode, an aqueous plating solution and a cathode CHARACTERIZED IN THAT the plating bath comprises a heterocyclic additive consisting essentially of phenolphthalein.

4,376,019

HALOGENATION PROCESS

Philip H. Gamlen, Stockton Heath; Michael S. Henty, Lathom; David R. Sandbach, Runcorn, and Brian T. Grady, Widnes, all of England, assignors to Imperial Chemical Industries PLC, London, England

Filed Apr. 21, 1981, Ser. No. 256,249
Claims priority, application United Kingdom, May 1, 1980, 8014404; May 1, 1980, 8014405; May 1, 1980, 8014406
Int. Cl.³ C25B *3/06*
U.S. Cl. 204—81 **16 Claims**

1. A process for the manufacture of halogenated hydrocarbons which comprises

(a) contacting a feedstock comprising at least one hydrocarbon or halogenated hydrocarbon containing an olefinic, acetylenic or aromatic group or a halogenated hydrocarbon containing a replaceable hydrogen atom, with a solution of a halide carrier which is a halide salt of a metal of variable valency in which the metal is in a higher valency state in a liquid medium which is a solvent for the hydrocarbon or halogenated hydrocarbon feedstock so as to halogenate the feedstock whereby the halide carrier is reduced to a spent carrier which is a halide salt of the metal in which the metal is in a lower valency state, and

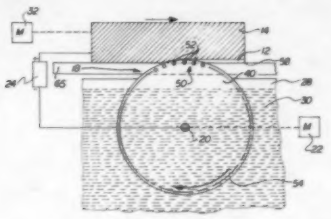
(b) regenerating the halide carrier from the spent carrier solution resulting from step (a),

characterised in that regeneration of the halide carrier from the spent carrier solution is by electrolysing the spent carrier solution in the presence of halide ions under conditions whereby deposition of elemental metal or metal salts and liberation of elemental halogen during the electrolysis are substantially avoided.

4,376,020
METHOD OF AND APPARATUS FOR CUTTING NARROW GROOVES

James D. Andrews, Birmingham, Mich., assignor to Electrodrill, Inc., Livonia, Mich.

Filed Dec. 24, 1980, Ser. No. 219,840
Int. Cl.³ B23P 1/12, 1/14
U.S. Cl. 204—129.5 11 Claims



1. A method of cutting a narrow groove in a workpiece formed of an electrically conductive material, said method comprising the steps of

providing an electrode disk formed of an electrically conductive material and having a continuous circular peripheral edge,

providing openings positioned radially inwardly from said continuous peripheral edge and extending axially inwardly from each major side of the disk toward the other major side,

rotating the electrode disk about its central axis,

establishing an electrical potential between the electrode disk and the workpiece,

establishing a flow of electrolyte between the electrode disk and the workpiece,

effecting relative movement between the rotating electrode disk and workpiece to bring them into close proximity,

establishing a flow of electrical current between the rotating electrode disk and the workpiece to initiate formation by electro-chemical action of a groove in the workpiece,

continuing the formation of the groove by continuing the movement of the rotating electrode disk and workpiece relative to each other to move the major sides of the electrode disk and side surfaces of the groove into an overlapping relationship,

establishing a flow of electrical current between the side surfaces of the groove and major sides of the rotating electrode disk during continued formation of the groove,

and moving the openings in the rotating electrode disk along the side surfaces of the groove to reduce the electrical current density between the side surfaces of the groove and the major sides of the electrode disk.

4,376,021
PROCESS FOR PRODUCING A WATER-SOLUBLE VINYL POLYMER

Jiro Okamoto, Takasaki; Isao Ishigaki, Maebashi; Hironobu Fukuzaki, Takasaki; Shozo Shimbo, Kakogawa, and Kiyoaki Yoshikawa, Kobe, all of Japan, assignors to Japan Atomic Energy Research Institute, Tokyo and Taki Chemical Co. Ltd., Hyogen, both of, Japan

Filed Mar. 18, 1981, Ser. No. 245,204
Claims priority, application Japan, Mar. 24, 1980, 55-39958
Int. Cl.³ C08F 2/54
U.S. Cl. 204—159.16 4 Claims

1. A process for producing a water-soluble vinyl polymer which comprises

polymerizing a water-soluble vinyl monomer selected from the group consisting of dimethylaminoethyl acrylate, dimethylaminoethyl methacrylate, diethylaminoethyl acrylate, and diethylaminoethyl methacrylate; a tertiary amine salt thereof; a quaternary ammonium salt thereof; acrylic acid, methacrylic acid and an ester thereof; acrylamide and methacrylamide; in the presence of a catalyst or under the action of ultraviolet rays to prepare a water-soluble polymer having a degree of polymerization of at least 95%,

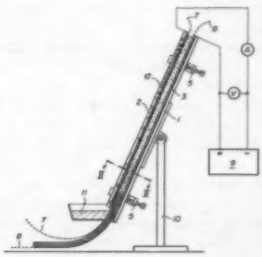
adjusting the water content of the system containing said polymer to be within the range of from 15 to 30%, and

then irradiating said system with ionizing radiation at a dose rate of 500 to 200,000 rad/m. to substantially reduce the residual monomer content without insolubilizing the polymer.

4,376,022
METHOD AND APPARATUS FOR CONCENTRATING AN AQUEOUS SLUDGE BY ELECTRO-OSMOSIS

Augusto Porta, Carouge, and Antonin Kulhanek, Le Lignon, both of Switzerland, assignors to Battelle Memorial Institute, Carouge, Switzerland

PCT No. PCT/CH80/00068, § 371 Date Feb. 5, 1981, § 102(e) Date Feb. 4, 1981, PCT Pub. No. WO80/02650, PCT Pub. Date Dec. 11, 1980
PCT Filed Jun. 3, 1980, Ser. No. 233,601
Claims priority, application Switzerland, Jun. 5, 1979, 5191/79
Int. Cl.³ B01D 57/02
U.S. Cl. 204—180 R 11 Claims



1. A method for dewatering a sludge of fine particles dispersed in water, comprising:

feeding the sludge into the top of a substantially vertical, elongated tubular electrofiltration enclosure having at least one wall permeable to water but impermeable to the particles;

passing the sludge along an elongated anode and in intimate contact therewith, and positioning a cathode in parallel or converging relation in the direction of displacement of the sludge with said anode;

continually circulating the sludge from top to bottom along the length of the substantially vertical enclosure, thereby increasing the hydrostatic pressure on said sludge for expelling water through said one water-permeable wall; and

applying an electric field to said sludge along substantially the length of said enclosure for inducing the passage of water through said permeable wall by electro-osmosis concurrently to the step of continually circulating the sludge wherein the increasing hydrostatic pressure gradually augments and reinforces the dewatering process by electro-osmosis as the sludge descends and thickens along said enclosure.

4,376,023

PROCESS FOR THE PREFERENTIAL SEPARATION OF DEXTROSE FROM OLIGOSACCHARIDES

Kalyanasundram Venkatsubramanian, New Brunswick, N.J.; Surendar M. Jain, Watertown, and Anthony J. Giuffrida, North Andover, both of Mass., assignors to The Hubinger Company, Keokuk, Iowa

Continuation-in-part of Ser. No. 203,633, Nov. 3, 1980, Pat. No. 4,299,677. This application Oct. 19, 1981, Ser. No. 312,400

Int. Cl.³ B01D *13/02*

U.S. Cl. 204—180 P 2 Claims

1. The process of separating dextrose preferentially from a mixture of oligosaccharides and dextrose by electrodialysis comprising the steps of (1) passing a liquid mixture of dextrose and oligosaccharides through a first feed chamber of an electro-osmosis cell comprising at least two chambers defined between ion exchange membranes having alternating high and low permeability coefficients will respect to each other, (2) passing a direct electric current transversely through said membranes and chambers in a direction to cause the dextrose to pass from said feed chamber through said high permeability coefficient membrane into a second chamber of said cell with said dextrose being substantially retained in the second chamber, and (3) recovering a oligosaccharide enriched and a dextrose enriched effluent from the seperate chambers.

4,376,024

METHOD FOR THE MANUFACTURE OF CONTAINERS

Torsten Andersson, Bara, and Bengt Jeppsson, Skanör, both of Sweden, assignors to PLM Aktiebolag, Malmo, Sweden

Filed Dec. 23, 1980, Ser. No. 219,501

Claims priority, application Sweden, Dec. 28, 1979, 7910703

Int. Cl.³ B05D *1/36;* C25D *13/06, 13/14, 13/20*

U.S. Cl. 204—181 R 9 Claims

1. A method for producing a metal article with a protective coating layer in which a workpiece is formed into the article by a non chip-producing operation with the use of lubricating agents, said method comprising placing the thus formed article after the forming operation in a liquid containing a bonding agent, dissolving said lubricating agents from the article into said liquid, and coating said bonding agents onto said article to form a protective coating layer thereon.

4,376,025

CYLINDRICAL CATHODE FOR MAGNETICALLY-ENHANCED SPUTTERING

Bogdan Zega, Geneva, Switzerland, assignor to Battelle Development Corporation, Columbus, Ohio

Filed Jun. 14, 1982, Ser. No. 388,482

Int. Cl.³ C23C *15/00*

U.S. Cl. 204—192 R 9 Claims

1. A cylindrical, magnetically-enhanced, sputtering cathode which produces a thin film on the surface of an object, which comprises:

a tubular target;

a hollow electrical conductor disposed within the tubular target;

means for applying an electric current through the conductor which generates a magnetic field around the tubular target; and

means for circulating a liquid coolant through the electrical conductor.

4,376,026

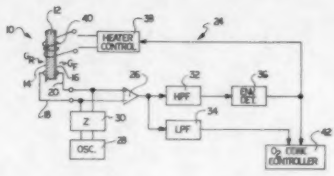
OXYGEN CONCENTRATION MEASUREMENT AND CONTROL

Alan R. Hoffman, Aurora, and Thomas J. Ryan, Broadview Heights, both of Ohio, assignors to The North American Manufacturing Company, Cleveland, Ohio

Filed Aug. 1, 1980, Ser. No. 174,593

Int. Cl.³ G01N *27/58*

U.S. Cl. 204—195 S 6 Claims



1. Apparatus comprising:

zirconium dioxide oxygen sensor means having an output upon which a D.C. output signal appears whose level is dependent upon temperature and the concentration of oxygen in an unknown gas relative to the concentration of oxygen in an unknown gas relative to the concentration of oxygen in a reference gas having a known oxygen concentration, and whose output impedance varies with temperature;

means for providing and applying an AC signal to said output of said oxygen sensor means so that said AC signal appears on said output superimposed on said DC signal and has an amplitude dependent upon the impedance of said oxygen sensor means;

means responsive to said superimposed signals for providing a first indication which is indicative of the amplitude of said AC signal and thus the temperature of said oxygen sensor means;

means responsive to said first indication for controlling the temperature of said oxygen sensor means;

means responsive to said superimposed signals for providing a second indication which is indicative of the amplitude of said DC signal and thus the concentration of oxygen in said unknown gas.

4,376,027

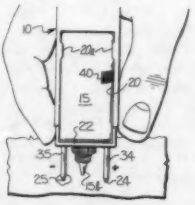
PORTABLE ELECTROLYTIC TESTING DEVICE FOR METALS

Joseph J. Smith, 2601 Knollwood Rd., Charlotte, N.C. 28211, and Thomas L. Moseley, 9352 Pinewood St., Charlotte, N.C. 28214

Filed May 27, 1981, Ser. No. 267,545

Int. Cl.³ G01N *27/46*

U.S. Cl. 204—195 R 13 Claims



1. A self-contained portable electrolytic testing device adapted to be used for quickly determining the presence of a given metal in a variety of metal alloys and characterized in that the device is of such size and lightweight construction that

it can be readily carried in the hand of a user, said testing device comprising

a housing adapted to be readily grasped and carried in a person's hand,

an electrical test circuit carried by said housing and including a storage battery and positive and negative electrodes electrically connected to said battery and extending outwardly from said housing,

an electrolytic solution for use with said electrodes, said electrolytic solution being visually changeable in color upon detection of the presence of a given metal, and

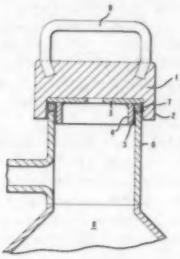
container means for containing and dispensing said electrolytic solution therefrom in small amounts and being carried by the housing to thus provide the electrolytic solution readily accessible for use with the electrical test circuit for quickly determining the presence of a given metal in a variety of metal alloys.

4,376,028

DOME CAP FOR FUSED SALT ELECTROLYTIC CELL

Richard D. Marczewski, Amherst, and Francis J. Ross, Niagara Falls, both of N.Y., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Mar. 4, 1981, Ser. No. 240,417
Int. Cl.³ C25C *7/00, 3/02*
U.S. Cl. 204—247 **3 Claims**



1. An electrolytic cell for the production of sodium and chlorine from fused salts, the cell having a cylindrical dome for collection of chlorine, a circular access port at the top of the dome, and a removable, floating, mating cap for the port, the cap comprising

(a) a circular body having a flange on its periphery and a sealing surface on the portion of the body which engages the lip of the port;

(b) attached to the circular body an inner ring, concentric with the outer flange, which, with the flange, defines a circular groove mated to the lip of the access port; and

(c) within the groove, a resilient inert packing which provides a seal between the lip of the access port and the sealing surface.

4,376,029

TITANIUM DIBORIDE-GRAPHITE COMPOSITS

Louis A. Joo', Johnson City; Kenneth W. Tucker, Elizabethton, and Frank E. McCown, Bristol, all of Tenn., assignors to Great Lakes Carbon Corporation, New York, N.Y.

Filed Sep. 11, 1980, Ser. No. 186,181
Int. Cl.³ C25B *11/04*; C25C *3/12*
U.S. Cl. 204—294 **3 Claims**

1. A process for the production of TiB_2-carbon composite comprised of the steps of mixing and dispersing particulate carbonaceous matter and TiB_2-forming reactants in a carbon-forming binder to form a plastic mixture, forming a shaped article from said mixture, baking said article at 700° to 1100° C., impregnating said baked article with a carbon-forming binder and rebaking said article to 700° to 1100° C.

4,376,030

ELECTROLYTIC CELL ION-EXCHANGE MEMBRANES

Bobby R. Ezzell, Lake Jackson; Harry S. Burney, Jr., Clute, and Marius W. Sorenson, Lake Jackson, all of Tex., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 70,183, Aug. 27, 1979. This application Mar. 4, 1981, Ser. No. 240,349
Int. Cl.³ C25B *13/08*
U.S. Cl. 204—296 **14 Claims**

1. A method for substantially stabilizing the dimensions of fluoropolymer membranes for use in electrolytic cells, said fluoropolymer membranes containing sulfonate functional groups of the empirical formula $R—SO_3^-$, and/or carboxylate functional groups of the empirical formula $R—COO^-$, where R represents attachment to a fluoropolymer,

said method comprising contacting the membranes at a temperature in the range of about 0° C. to 100° C. with at least one liquid amine of the group consisting of primary, secondary, and tertiary organic amines for a period of time to form easily disassociable amine salts with an appreciable amount of said acid groups, said salts conforming substantially to the empirical formula $R—SO_3H.A$ and/or R—COOH.A, where A is amine, said amine moieties being easily removed by aqueous leaching,

draining or drying the membranes to substantially remove excess liquid amine therefrom,

storing said membranes until installment thereof in electrolytic cells.

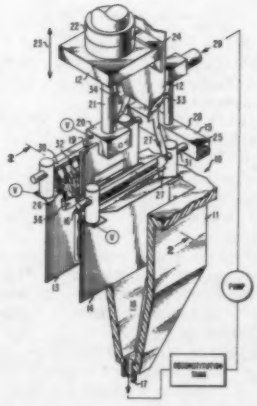
11. The dried membrane containing easily disassociable amine salts of said sulfonate functional groups prepared in accordance with claim 1.

4,376,031

APPARATUS FOR ELECTROPHORETIC DEPOSITION

James E. Andrus, Cranbury, and Kenneth W. Hang, Princeton Junction, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Mar. 31, 1982, Ser. No. 363,801
Int. Cl.³ C25B *7/00*
U.S. Cl. 204—299 EC **5 Claims**



1. An apparatus for the electrophoretic deposition of material on an article comprised of:

(a) a tank of a predetermined length adapted to hold a suspension of the material in a liquid medium at a predetermined liquid level;

(b) first and second electrodes positioned within the interior of the tank in a parallel spaced-apart relationship to each other with each of said electrodes being adapted to receive a voltage of a first polarity;

(c) an article holder means for positioning and holding the article in a spaced-apart relationship from the first and second electrodes, said holder means further including means for providing a voltage of the opposite polarity to said first polarity to said article during electrophoretic deposition so as to form a first and a second electrophoretic zone between the first electrode and the article and the second electrode and the article, respectively;

(d) a distribution manifold means, said distribution manifold means including an inlet port for receiving a supply of the suspension and first and second discharge tubes, said discharge tubes being approximately said predetermined length of said tank and having a plurality of discharge apertures defined along the length thereof, said first discharge tubular member being positioned above the liquid level adjacent to the first electrophoretic zone, and said second tubular member being positioned above the liquid level adjacent the second electrophoretic zone; and

(e) first and second flow guide means, said flow guide means being impervious longitudinal members of approximately said predetermined length, having an upper longitudinal edge and a lower longitudinal edge, the upper longitudinal edge of the first and second flow guides being positioned below the discharge apertures of the first and second tubular members, respectively, so that the suspension discharge from the apertures flows onto and down the surface of the first and second guide members, respectively, the lower longitudinal edge of said guide members being formed into an open-bottomed receptacle having a given wall height such that the receptacle on each of the flow guides can be partially submerged into the suspension below the liquid level, said first flow guide means being positioned with the open-bottomed receptacle in the suspension in the first electrophoretic zone and the second flow guide member being positioned with the open-bottomed receptacle in the second electrophoretic zone,

whereby when suspension is introduced into said manifold distribution means, the suspension flows from the apertures in the tubular members, along the guide plates, and into the electrophoretic zones below the liquid level of the suspension held in the tank.

4,376,032

COAL LIQUEFACTION DESULFURIZATION PROCESS

Edwin N. Givens, Bethlehem, Pa., assignor to International Coal Refining Company, Allentown, Pa.

Filed May 29, 1981, Ser. No. 268,449

Int. Cl.³ C10G *1/00, 29/00, 29/04*

U.S. Cl. 208—8 LE **11 Claims**

1. An improved process for preparing desulfurized solvent refined coal liquefaction products comprising the steps of:

(a) forming a slurry of comminuted coal and a hydrogen donor solvent,

(b) reacting said slurry with hydrogen at elevated temperature and pressure to dissolve a portion of said coal and to form a reacted mixture comprising said slurry, gases and a solution containing volatile and non-volatile solvent refined coal products,

(c) separating said gases and said volatile products having an ambient pressure boiling point below about 450° F. from said reacted mixture to form a devolatilized reacted mixture,

(d) desulfurizing the remaining portion of said devolatilized reacted mixture by contacting the same with a solvent insoluble sulfur getter, for a time and under conditions sufficient for said getter to react with sulfur in said devolatilized reacted mixture to form getter-sulfur solids and desulfurized solvent refined coal products herein, and

(e) separating said getter-sulfur solids and other insoluble solids remaining in said devolatilized reacted mixture from said desulfurized solvent refined coal products.

4,376,033

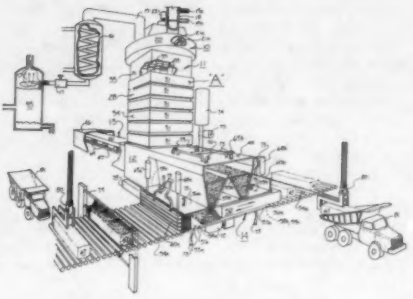
METHOD FOR RECOVERING SHALE OIL FROM SHALE

Albert Calderon, 1065 Melrose Dr., Bowling Green, Ohio 43402

Filed Nov. 24, 1980, Ser. No. 209,831

Int. Cl.³ C10G *1/00;* **E21C** *41/10;* **B09B** *3/00*

U.S. Cl. 208—11 R **48 Claims**



1. A method of recovering oil from shale comprising the steps of:

(a) charging shale into a plurality of compartments whose walls comprise a material which is adaptable to being heated by induction and wherein said plurality of compartments commonly share an induction coil means which surrounds said plurality of compartments and said induction coil means does not individually surround any of said compartments;

(b) heating said walls of said compartments by said induction coil means to cause the pyrolization of said shale contained within each compartment to result in the driving of the gaseous and volatile matter from said shale;

(c) collecting said gaseous and volatile matter; and

(d) discharging the spent shale from said plurality of compartments after pyrolization.

4,376,034

METHOD AND APPARATUS FOR RECOVERING CARBON PRODUCTS FROM OIL SHALE

Edward T. Wall, 6055 S. Monaco Way, Englewood, Colo. 80111

Continuation-in-part of Ser. No. 104,263, Dec. 17, 1979, abandoned. This application Dec. 5, 1980, Ser. No. 213,375

Int. Cl.³ C10G *1/00;* **C10B** *1/04;* **B01D** *3/00;* **C10B** *19/00*

U.S. Cl. 208—11 R **7 Claims**

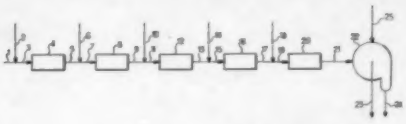
1. Apparatus for producing liquid and gaseous hydrocarbons from oil shale fragments comprising, in combination, a vertical kiln closed to the admission of air and composed of upper and lower sections, each of which is tapered in configuration from a relatively narrower end to a relatively wider end, the wider end portions of said sections being joined together by an intermediate transition section, a control grate positioned in said transition section for controlling the flow of the shale fragments through the kiln, means including a conveyor extending through a microwave suppression tunnel and gas seal into the upper section of the kiln for introducing oil shale fragments into said upper section, means including a conveyor through a microwave suppression tunnel and gas seal extending from the bottom of the lower section of the kiln for discharging processed oil shale fragments from the bottom of the lower section of the kiln, means for applying microwave energy to the upper and lower sections of said kiln adjacent to the narrow ends thereof, and means for collecting liquid and gaseous products produced in the kiln from the oil shale by the application of said microwave energy.

4,376,035

PROCESS FOR THE SEPARATION OF SATURATED HYDROCARBONS FROM A HYDROCARBON CHARGE CONTAINING THEM

Andre Cadet, Le Havre, France, assignor to Compagnie Francaise de Raffinage, Paris, France

Filed Nov. 19, 1980, Ser. No. 208,137
Claims priority, application France, Nov. 22, 1979, 79 28853
Int. Cl.³ C10G 21/00, 21/02
U.S. Cl. 208—33 10 Claims



1. A process for the separation of a hydrocarbon charge into two fractions, namely, a waxy hydrocarbon fraction essentially composed of saturated hydrocarbons, said fraction precipitating at a temperature equal to or higher than a given temperature in a given environment, and an oily hydrocarbon fraction which remains liquid at said given temperature, said process comprising adding a solvent system to the hydrocarbon charge in at least two diluting steps, following each diluting step by a chilling step which is separate from the preceding diluting step, said solvent system at all times being composed at least in part of an antisolvent for said waxy fraction, said solvent system during at least one of the dilution steps also being composed of a solvent component adapted to dissolve the oily hydrocarbon fraction, changing the composition of the solvent system at least once in the course of the various dilutions, any change in the composition of the solvent system being so as to diminish the proportion of antisolvent in the changed solvent system with respect to the composition of the solvent system in any of the preceding dilutions, and then after the last chilling step separating the precipitated waxy fraction from said oily fraction.

4,376,036

PRODUCTION OF HIGH V. I. LUBRICATING OIL STOCK

William E. Garwood, Haddonfield; Paul G. Rodewald, Rocky Hill, and Nai Y. Chen, Titusville, all of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Mar. 6, 1981, Ser. No. 241,319
Int. Cl.³ C10G 47/16
U.S. Cl. 208—111 11 Claims

1. In a process for catalytically hydrodewaxing a lubricating oil stock containing high pour point waxy paraffins by contacting the same in the presence of added hydrogen at elevated temperatures and pressures with a catalyst composition comprising a binder and a crystalline aluminosilicate zeolite having a silica to alumina ratio of at least about 12 and a constraint index within the approximate range of 1 to 12, the improvement which comprises carrying out said hydrodewaxing with said zeolite which has been silica-modified by the addition of at least 0.1% by weight silica to said catalyst from the reaction of said catalyst with silicones or silanes so as to enhance the selectivity of the catalyst for said high pour waxy paraffins and recovering a product having an enhanced viscosity index.

4,376,037

HYDROPROCESSING OF HEAVY HYDROCARBONACEOUS OILS

Arthur J. Dahlberg, Rodeo; John H. Shinn, Richmond; Joel W. Rosenthal, El Cerrito, and Tim T. Chu, Oakland, all of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Filed Oct. 16, 1981, Ser. No. 312,437
Int. Cl.³ C10G 47/02, 47/06
U.S. Cl. 208—111 26 Claims

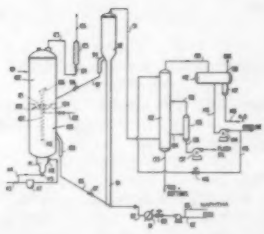
1. A process for hydroprocessing a heavy hydrocarbonaceous oil feed to convert at least a portion of feed components boiling above 350° C. to components boiling below 350° C. comprising contacting said oil with hydrogen in a reaction zone under hydroprocessing conditions including a hydrogen partial pressure of about 35 atmospheres in the presence of (1) added dispersed hydrogenation catalyst suspended in said oil and containing at least one catalytic hydrogenation component selected from transition metal elements or compounds thereof, and (2) added porous contact particles substantially free of added catalytic transition elements or compounds thereof.

4,376,038

USE OF NAPHTHA AS RISER DILUENT IN CARBO-METALLIC OIL CONVERSION

George D. Myers, deceased, late of Ashland, Ky. by Virginia K. Myers, administratrix, assignor to Ashland Oil, Inc., Ashland, Ky.

Continuation-in-part of Ser. No. 94,092, Nov. 14, 1979, Pat. No. 4,332,673, and Ser. No. 94,216, Nov. 14, 1979, Pat. No. 4,341,624. This application Mar. 23, 1981, Ser. No. 246,791
Int. Cl.³ C10G 11/04
U.S. Cl. 208—113 23 Claims



1. A process for converting carbo-metallic oils to lighter products, comprising:

(a) providing a converter feed containing 650° F.+ material, said 650° F.+ material being characterized by a carbon residue on pryolysis of at least about 1 and by containing at least about 4 ppm of Nickel Equivalents of heavy metals(s);

(b) bringing said converter feed together with naphtha;

(c) bringing said converter feed and said naphtha together with a high-metal content cracking catalyst;

(d) forming a stream containing said converter feed, said naphtha and said catalyst and causing said stream to flow through a progressive flow type reactor having an elongated reaction chamber which is at least in part vertical or inclined for a predetermined vapor residence time in the range of about 0.5 to about 10 seconds at a temperature of about 900° F. to about 1400° F. and under a pressure of about 10 to about 50 pounds per square inch absolute sufficient for causing a conversion per pass in the range of about 50% to about 90% while producing coke in amounts in the range of about 5% to about 14% by weight based on fresh feed, and laying down coke on the catalyst in amounts in the range of about 0.3% to about 3% by weight;

(e) separating said catalyst from the resultant cracking products;

(f) stripping hydrocarbons from said separated catalyst;

(g) regenerating said catalyst with oxygen-containing combustion-supporting gas under conditions of time, temperature and atmosphere sufficient to reduce the carbon on said catalyst to about 0.25% by weight or less, while forming a gaseous combustion product comprising CO and/or CO_2; and
(h) recycling the regenerated catalyst to the reactor for contact with fresh converter feed.

4,376,039

HYDROCARBON CONVERSION CATALYSTS AND PROCESSES UTILIZING THE SAME

Elroy M. Gladrow, Sun City, Ariz.; William E. Winter, and William L. Schuette, both of Baton Rouge, La., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Division of Ser. No. 196,191, Oct. 10, 1980, Pat. No. 4,339,354. This application Feb. 1, 1982, Ser. No. 344,865

Int. Cl.³ C10G *11/05*

U.S. Cl. 208—120 **15 Claims**

1. A process for the catalytic cracking of a hydrocarbon feedstock, which comprises: contacting said feedstock at catalytic cracking conditions with a catalyst comprising:
(a) a crystalline aluminosilicate zeolite having uniform pore diameters ranging from about 6 to about 15 Angstroms, and a silica to alumina mole ratio of at least about 3;
(b) an inorganic oxide matrix,
said zeolite prior to being composited with (b) having a unit cell size greater than about 24.5 Angstroms, and said catalyst having an alkali metal content such that the ratio of weight percent alkali metal, calculated as the alkali metal oxide, based on the total catalyst, divided by the weight percent zeolite based on the total catalyst is not greater than 0.024 and a rare earth metal content such that the ratio of weight percent rare earth metal oxide, based on the total catalyst, divided by the weight percent zeolite based on the total catalyst ranges from about 0.01 to about 0.08.

4,376,040

PROCESS FOR TREATING AND REGENERATING USED OIL PRODUCTS

Gabriel Sader, 23, rue du Chemin Vert, 75011 Paris, France

Filed Apr. 28, 1981, Ser. No. 258,535

Claims priority, application France, Apr. 29, 1980, 80 09586

Int. Cl.³ C10M *11/00*

U.S. Cl. 208—180 **7 Claims**

1. Process of treating nonedible oil products, particularly used lubricating and industrial oils, to recover a large fraction of directly reusable oil, consisting essentially of:
agitating the used oil in the presence of a quaternary ammonium salt containing at least one aryl ring, or a mixture of such salts, and then
decanting and recovering the supernatant fraction as a regenerated oil.

4,376,041

HYDROTREATING PROCESS

Ryden L. Richardson, Whittier, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

Division of Ser. No. 211,110, Nov. 28, 1980. This application Nov. 9, 1981, Ser. No. 319,630

Int. Cl.³ C10G *45/08*

U.S. Cl. 208—215 **18 Claims**

1. In a process for hydrotreating a hydrocarbon feedstock to reduce the organo-sulfur or organo-nitrogen content thereof by contact with a catalyst under conditions of elevated temperature and pressure, and in the presence of hydrogen, the improvement wherein said catalyst comprises nickel, molybdenum, and phosphorus components on a support comprising gamma alumina, said catalyst having been prepared by a method including the steps of partially hydrating support particles comprising gamma alumina by contact with a gas comprising a substantial proportion of water vapor while said support particles are in motion relative to each other, impregnating the partially hydrated support particles with nickel, molybdenum, and phosphorus components, and calcining the resulting composite at an elevated temperature in the presence of oxygen.

4,376,042

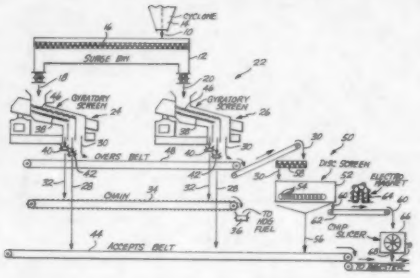
CHIP SIZING PROCESS

Robert A. Brown, Arlington, Wash., assignor to Weyerhaeuser Company, Tacoma, Wash.

Filed May 11, 1981, Ser. No. 262,276

Int. Cl.³ B07B *9/00*

U.S. Cl. 209—38 **9 Claims**



1. A process for fractionating and sizing a flow of incoming wood chips from a known source into an output flow of chips falling in a predetermined size range with substantially all of the chips in the output flow having a thickness falling within a predetermined thickness range, comprising the steps of:
directing the incoming flow to a primary screening station where at least two fractions are generated with a first fraction containing chips falling substantially within the predetermined acceptable size and thickness range and a second fraction comprising at least 30% by weight of the incoming flow having a substantial majority of the oversize and overthick chips together with a substantial amount of chips falling within the acceptable size and thickness range, and
directing the second fraction to a second screening station where at least two fractions are generated with a fourth fraction containing chips falling substantially within the predetermined acceptable size and thickness range and a fifth fraction containing chips substantially all of which are overthick.

4,376,043

PROCESS OF TREATING DUST CONTAINING ZINC AND LEAD AND DERIVED IN AN IRON OR STEEL MAKING PROCESS

Cornelis P. Heijwegen, and Willem Kat, both of Ijmuiden, Netherlands, assignors to Estel Hoogovens B.V., Ijmuiden, Netherlands

Filed May 11, 1981, Ser. No. 262,690

Claims priority, application Netherlands, May 13, 1981, 8002743

Int. Cl.³ B03D *1/14*

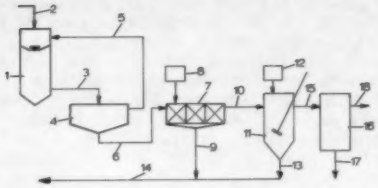
U.S. Cl. 209—167 **2 Claims**

1. A process of treating dust containing zinc and lead oxides of size less than 0.02 mm and derived from a gas cleaning installation in an iron or steel-making process, comprising the steps of
(i) subjecting said dust to a flotation separation treatment in a bath of pH in the range 7 to 9 containing a frother selected from the group consisting of short chain alcohol polyglycol ethers, branched hexanols and branched decanols such that the dust is separated according to dust

particle size into a floated component in which the zinc and lead are concentrated and non-floated component,

(ii) feeding said non-floated component to an ore-preparation process for a reduction furnace,

(iii) treating said floated component with HCl to dissolve at least 90% of the zinc and lead components present,



(iv) separating residual solid material from said dissolved components and

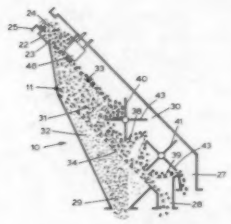
(v) feeding said residual solid material to said ore preparation process.

4,376,044

AUTOMATIC SIZING DEVICE

Doyle Ditzenberger, Rockwell City, Iowa, assignor to Butler Manufacturing Company, Kansas City, Mo.

Filed Jul. 29, 1981, Ser. No. 287,881
Int. Cl.³ B07B *1/00*
U.S. Cl. 209—234 **5 Claims**



1. An automatic sizing device for particulate or granular material flowing therethrough containing at least large and medium sized particles, said sizing device comprising:

(a) an inclined housing having first and second conduit means, an inlet opening for receiving said material in one end of said first conduit means, and at least one lower outlet opening for exit of said medium sized particles from an opposite end of said second conduit means;

(b) a first inclined stationary sizing means to divide said housing into said first and second conduit means and having a plurality of openings between said first and second conduit means sized to permit passage of said medium sized particles therethrough;

(c) a first retarding means in said first conduit means and associated with said first sizing means to retard the flow of said material through said first conduit means thereby urging said material against the upper surface of said first sizing means whereby said medium sized particles pass through said sizing means into said second conduit means and exit from said outlet opening;

(d) said first sizing means is formed with a first transversely extended trough adjacent to said retarding means; and

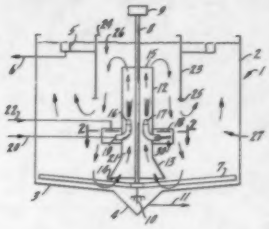
(e) said first retarding means is transversely extended across said sizing means and is in the form of a rotatably driven rotor having at least one vane for sweeping said material that has not passed through said sizing means out of said first trough to continue its flow in said first conduit means.

4,376,045

LIQUID TREATMENT APPARATUS

David A. Sinkind, Brooklyn, N.Y., assignor to Ecodyne Corporation, Chicago, Ill.

Filed May 11, 1981, Ser. No. 262,108
Int. Cl.³ B01D *21/24*
U.S. Cl. 210—134 **10 Claims**



1. Liquid treating apparatus comprising:

A. a tank having a treated liquid outlet at its upper end and a settled solids outlet at its bottom, a rotatable rake adjacent the bottom of said tank for moving settled solids toward said settled solids outlet, and power-driven means for rotating said rake;

B. an open-ended vertical updraft tube centered in said tank, the lower end of said tube terminating above said rake, the upper end of said tube terminating below the upper surface of the liquid in said tank, baffle means surrounding and coaxial with said tube, the upper end of said baffle means extending above the upper surface of the liquid in said tank, and the lower end of said baffle means terminating above said lower end of said tube, said baffle means defining a solids mixing and recirculation zone in said tank surrounding said tube;

C. a manifold for untreated liquid around said tube, means connecting said manifold to a pressurized source of untreated liquid;

D. a plurality of untreated liquid inlet nozzles defining liquid passages therethrough, each having an upwardly directed outlet end within said tube, an inlet end of said nozzle communicating with the inside of said manifold, the pressurized liquid exiting from said nozzles flowing rapidly up and out of said upper end of said tube, thereby drawing settled solids into said lower end of said tube and through said tube where such solids mix with such untreated liquid;

E. means for automatically regulating the quantity of settled solids drawn upwardly into said tube as the flow of incoming untreated liquid varies comprising pressure sensitive means for automatically varying the size of the liquid passages in at least some of said nozzles in proportion to the volume of liquid flowing into said manifold;

F. means defining a solids settling zone in said tank.

4,376,046

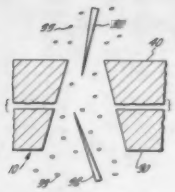
SYSTEM WITH ASYMMETRIC MICROPOROUS MEMBRANE FOR THE CIRCULATION OR MOVEMENT OF SOLUTIONS

Daniel H. Deutsch, 141 Kenworthy Dr., Pasadena, Calif. 91105

Filed Jun. 1, 1981, Ser. No. 268,872
Int. Cl.³ B01D *31/00*
U.S. Cl. 210—176 **11 Claims**

1. A system for the circulation or movement of a solution comprising a conduit for the solution, a solution of conical shaped solute particles, and an asymmetric microporous membrane positioned in the conduit so that solution flow through the conduit can only occur by passage of the solution through the membrane, the pores of the membrane being approximately uniform in size and tapered, from a large opening to a small

opening, substantially all of the large openings being on one face of the membrane and substantially all of the small openings being on the other face of the membrane, wherein the conical shaped solute particles are all of approximately the same size, the length of the particles being greater than the diameter of the larger opening of the tapered holes through the



membrane, the diameter of the base of the conical shaped solute particles being less than the diameter of the smaller opening of the tapered holes through the membrane, the length of the conical shaped solute particles being greater than the diameter of the base of the conical shaped solute particles, the length of the conical shaped solute particles being not more than about 100 microns.

4,376,047

COATED RESIN ION EXCHANGE COMPOSITION

Christopher A. Pohl, Hayward, Calif., assignor to Dionex Corporation, Sunnyvale, Calif.

Filed Jun. 18, 1981, Ser. No. 275,109

Int. Cl.³ B03B *5/60*

U.S. Cl. 210—198.2 **6 Claims**

1. An ion exchange composition comprising synthetic resin support particles with ion exchange sites at their exposed surfaces, and fine synthetic resin layering particles with ion exchange sites on their exposed surfaces which attract the ion exchange sites of said support particles so that said layering particles are irreversibly attached as a monolayer to said support particles, said layering particles having a median diameter ranging from 0.002 to 0.08 micron, the ratio of median diameter of support particles to layering particles ranging between 100 to 1 and 5000 to 1.

6. The composition of claim 1 in a packed chromatographic column.

4,376,048

SLUDGE COLLECTOR FOR USE IN A SETTLING BASIN

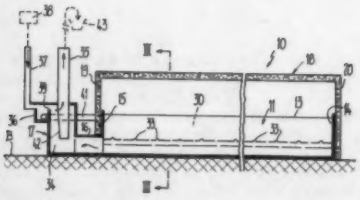
Nandor Kovacs, Geneva, Switzerland, assignor to Kemiko SA, Geneva, Switzerland

Filed Aug. 3, 1981, Ser. No. 289,478

Claims priority, application Switzerland, Aug. 14, 1980, 6128/80

Int. Cl.³ B01D *21/10*

U.S. Cl. 210—221.1 **7 Claims**



1. A sludge collector for use in a settling basin, and comprising: a suction pump; a collecting trough open at its top; horizontal overflow-weirs bounding the sides of the collecting trough and being intended to rest on the bottom of the settling basin; a line level with the bottom of the collecting trough, issuing from the trough and running to the suction side of the suction pump; a hood covering the trough, the hood widening towards its bottom and leaving an unobstructed interspace between itself and the overflow-weirs, this hood having apertures defined therein which lie at a lower level than the overflow-weirs; the suction pump being in the form of a mammoth pump which is operated by means of compressed air and comprises a chamber and a line emerging from the chamber, the line emerging from the collecting trough opening into a lift pipe of the mammoth pump; a compressed air distribution-head communicating with the chamber and a compressed air supply line connected to the distribution head; tabs adjoining the overflow-weirs, said tabs having free lower edges and pointing obliquely downwards and away from the collecting trough and forming a chamber open in the downward direction, between themselves and the side walls of the collecting chamber; at least one compressed air supply line, issuing from the compressed air distribution-head opening into this chamber, and the free, lower edges of the tabs being located higher than the openings formed in the hood.

4,376,049

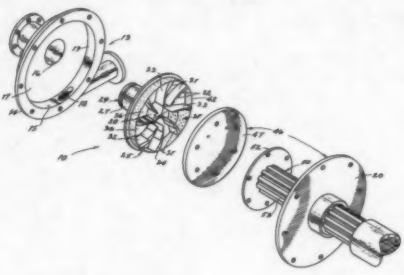
DYNAMIC FILTER SYSTEM

Philip J. Valentine, 505 N. Yelm, Kennewick, Wash. 99336

Filed Dec. 28, 1981, Ser. No. 334,918

Int. Cl.³ B01D *33/02*

U.S. Cl. 210—232 **19 Claims**



1. A dynamic fluid filter, comprising:

a housing having an axial fluid inlet formed along an inlet axis and a tangential fluid discharge communicating with an otherwise closed chamber;

rotor means journalled for free rotation within the housing chamber about the inlet axis including passages opening at the housing fluid inlet and extending substantially radially outward to ends opening into the housing chamber and fluid discharge;

filter elements mounted within the passages;

seal means between the rotor means and housing preventing access to the housing chamber by fluid except through said rotor passages;

whereby forcible rotation of the rotor means within the housing results in fluid being drawn through the housing inlet port and forced radially outward by centrifugal force through the passages and filter elements.

4,376,050

SURGE DEVICES FOR LIQUID-SOLID SEPARATORS

Donald F. Nichols, Boise, Id., assignor to Morrison-Knudsen Company, Inc., Boise, Id.

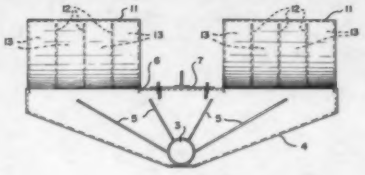
Continuation of Ser. No. 88,628, Oct. 26, 1979, abandoned. This application Apr. 9, 1981, Ser. No. 252,282

Int. Cl.³ B01D *35/00*

U.S. Cl. 210—248 **4 Claims**

1. In a liquid-solid separator having a tank arranged to re-

ceive liquid-solid material delivered in surges with entrained air and separator screen means for separation of solids from liquid, said screen means being positioned to receive a controlled flow of liquid-solid material from overflow weir means in said tank, the improvement which comprises an extension of said tank vertically above said weir means, said extension being



in the form of a closed upward extension of the tank, said extension being divided by vertical partitions into a plurality of separated compartments above the weir means, whereby surges of material into the tank rise freely upward without restriction while being confined against lateral movement by said partitions.

4,376,051

STERILIZATION OF AN ARTIFICIAL ORGAN

Keinosuke Isono, Kawaguchi, Japan, assignor to Terumo Corporation, Tokyo, Japan

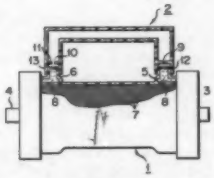
PCT No. PCT/JP80/00039, § 371 Date Oct. 31, 1980, § 102(e) Date Oct. 31, 1980, PCT Pub. No. WO80/01876, PCT Pub. Date Sep. 18, 1980

PCT Filed Mar. 5, 1980, Ser. No. 212,726

Claims priority, application Japan, Mar. 5, 1979, 54/25434

Int. Cl.³ B01D *31/00*

U.S. Cl. 210—321.3 **7 Claims**



1. In a heat sterilized artificial organ comprising:

a device body filled with an aqueous solution harmless to the human body;

at least one of blood ports and dialyzate ports in liquid communication with the device body; and

a liquid pressure-buffering tube in liquid communication with at least one of said blood ports and dialyzate ports, and containing such an amount of gas as is capable of quantitatively absorbing the expansion of said aqueous solution during thermal sterilization of the artificial organ, said liquid pressure-buffering tube having two end portions;

the improvement wherein:

said liquid pressure-buffering tube being substantially unexpandable during thermal sterilization of the artificial organ, and comprising one end portion near said at least one of said blood and dialyzate ports with which said liquid pressure-buffering tube is in liquid communication, means defining a small orifice in said one end portion of said tube, said small orifice being dimensioned sufficiently small for preventing said gas within said liquid pressure-buffering tube from being replaced by said aqueous solution filled in said device body at normal ambient temperatures and for allowing the passage of said aqueous solution through said small orifice during heating of said artificial organ during sterilization thereof, said small orifice being smaller than the cross-sectional area of said port with which it communicates and smaller than the cross-sectional area of said liquid pressure-buffering tube at least in the vicinity of said port with which it communicates.

4,376,052

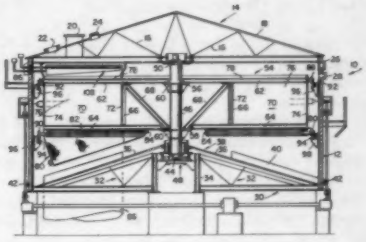
FLUID MANIFOLD ASSEMBLY FOR SOLVENT EXTRACTOR

Donald A. Gessler, Verona, Pa., assignor to Dravo Corporation, Pittsburgh, Pa.

Filed Feb. 23, 1981, Ser. No. 236,741

Int. Cl.³ B01D *11/02*

U.S. Cl. 210—511 **6 Claims**



1. In a solvent extractor including a vessel having a plurality of cells formed by a plurality of radially extending walls arranged in circumferential fashion on a generally horizontal plane around a vertical extending rotor, a feed conduit for introducing solids to be treated into said cells, a solids-retaining bottom closure for each of said cells, a track to maintain said bottom closures in substantially closed position during a predetermined section of a rotational path of each of said cells, fluid manifold assemblies for successively introducing a solvent into said cells from above said predetermined section of said rotational path, liquid collection zones disposed beneath said cells and including a plurality of compartments for receiving liquid, an improved fluid manifold assembly, which comprises:

an elongated substantially horizontally-disposed conduit member having an overflow wall member,

a plurality of vertically-disposed gate member with said conduit member thereby dividing said conduit member into plurality of sub-zones;

conduit means for introducing a fluid into said sub-zones of said conduit member; and

means for moving said gate members from within said conduit member.

4,376,053

METHOD AND SYSTEM EMPLOYING A FILTER-DETECTOR FOR DETECTING MASTITIS IN COWS

George P. Bullock, Cirencester, and Barry R. Marshall, Minster Lovell, both of England, assignors to Ambic Group Limited, Minster Lovell, England

Continuation of Ser. No. 35,522, May 3, 1979, abandoned. This application Sep. 29, 1980, Ser. No. 191,449

Claims priority, application United Kingdom, Sep. 9, 1978, 36287/78; Dec. 5, 1978, 47195/78

Int. Cl.³ B01D *29/04, 41/04*

U.S. Cl. 210—767 **18 Claims**

1. A method of detecting milk clots in a milk flow line between a cow and a container including the steps of:

placing in a vacuum milk flow line between a cow and the container a filter-detector casing having an inlet, an outlet,

opposed transparent faces permitting visual inspection completely through the casing,

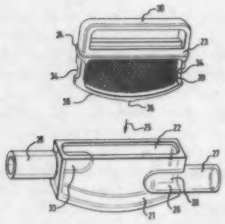
and including in the casing a filter-detector element having a flow cross-sectional area substantially greater than the inlet cross-sectional area or the outlet cross-sectional area, said filter element having a perforated filter-detector area and a bypass opening,

exerting a vacuum to draw milk from the cow through the milk flow line and through and filter-detector element such that at least some milk flows through the perforated filter-detector area and wherein air flows through the bypass to maintain vacuum in the milk flow line, the flow cross-sectional area of the bypass being large enough to maintain vacuum in the line even if the perforated area becomes completely clogged, and

observing whether milk clots are contained in the milk by viewing the filter-detector area through said transparent faces to observe the presence or absence of milk clots on the filter-detector element.

6. In a system for milking a cow and including a milk flow line connectable at one end to a cow's udder and connectable at its other end to a vacuum source, the improvement comprising:

a filter-detector casing of unitary construction and having a fluid inlet connectable to the milk flow line in communication with the cow and a fluid outlet connectable to a vacuum source, said casing having opposed parallel transparent faces, the axes of the inlet and outlet being parallel to each other and extending parallel to the opposed faces,



a filter-detector element removably and reversibly insertable into an open slot in said casing and including sealing means for sealing said open slot when the filter-detector element is positioned therein in either of said reversible positions,

said filter-detector element including a perforated filter-detector area extending generally parallel to said opposed faces such that the said filter area is readily visible upon viewing through the opposed transparent faces,

said filter-detector also including a bypass opening to assure the presence of a vacuum in the milk flow line,

said filter-detector element further comprising a unitary frame surrounding the edge of the perforated filter area to define therewith an inner area, and said unitary frame also includes an outer area which includes means for handling the filter element from outside of the casing,

the sealing means defining a continuous line located n the vicinity of the open slot and generally parallelling the edge of the slot, so as to divide the filter-detector into said inner portion on the side thereof within the casing, and said outer portion which is not exposed to the flow of liquid through the casing, and wherein the entire inner portion exposed to liquid flowing through the casing from the inlet to the outlet in either of the reversible positions of the filter-detector within the casing, and the outer portion remains outside of the seal line in either of the reversible positions of the filter-detector.

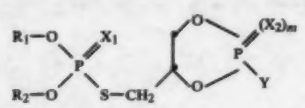
4,376,054

1,3,2-DIOXAPHOSPHOLANES AS LUBRICANT ADDITIVES AND LUBRICANTS CONTAINING SAME

Horst Zinke, Ernsthofen, Fed. Rep. of Germany, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

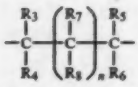
Continuation of Ser. No. 164,641, Jun. 30, 1980, abandoned. This application Oct. 15, 1981, Ser. No. 311,690
Claims priority, application Switzerland, Jul. 6, 1979, 6350/79
Int. Cl.³ C10M 1/48
U.S. Cl. 252—46.7 15 Claims

1. A compound of formula I



(I)

wherein R_1 and R_2 independently of one another are each C_1–C_{18}-alkyl, C_5–C_{12}-cycloalkyl, phenyl, phenyl substituted by one or two C_1–C_{12} alkyl groups, C_7–C_9 aralkyl, C_7–C_9 aralkyl substituted by one or two C_1–C_{12} alkyl groups; or R_1 and R_2 are each C_2–C_{10} alkoxyalkyl, C_3–C_{20} alkoxycarbonylalkyl; or R_1 and R_2 together form a bivalent radical of the formula II



(II)

wherein R_3, R_4, R_5 and R_6 independently of one another are each hydrogen, C_1–C_4-alkyl, cyclohexyl or phenyl, R_7 and R_8 independently of one another are each hydrogen, C_1–C_4-alkyl, cyclohexyl, phenyl, nitro, cyano, C_2–C_{19}-alkoxycarbonyl, C_2–C_{18}-alkanoyl, a group of the formula $(R_9—O)_2—P(O)—$, in which R_9 is C_1–C_{18}-alkyl, or R_7 and R_8 together are 2-pentenylene or 2-butenylene, n is nought or 1, one of the radicals X_1 or X_2 is oxygen and the other is oxygen or sulfur, with the proviso that X_1 and X_2 independently can either be oxygen or sulfur when R_1 and R_2 together are a radical of formula II, m is nought or 1, and Y is hydrogen, halogen, $—OR_{10}$, $—SR_{10}$, $—N(R_{11})R_{12}$, $—OH.NH_3$, $—SH.NH_3$, $OH.(R_{11})N(R_{12})R_{13}$ or $—SH.(R_{11})N(R_{12})R_{13}$, in which R_{10} is hydrogen, C_1–C_{18} alkyl, C_5–C_{12} cycloalkyl, phenyl, phenyl substituted by one or two C_1–C_{12} alkyl groups, phenyl substituted by a C_3–C_{20} alkoxycarbonylalkyl group or phenyl substituted by a mixture of alkyl and alkoxycarbonylalkyl groups; C_7–C_9 aralkyl, C_7–C_9 aralkyl substituted by one or two C_1–C_{12} alkyl groups, C_7–C_9 aralkyl substituted by a C_3–C_{20} alkoxycarbonylalkyl group or C_7–C_9 aralkyl substituted by a mixture of alkyl and alkoxycarbonylalkyl groups; C_3–C_{10} alkoxyalkyl or C_3–C_{20} alkoxycarbonylalkyl, and R_{11}, R_{12} and R_{13} independently of one another are each hydrogen, C_1–C_{30}-alkyl, C_1–C_{30}-alkenyl or C_1–C_{30}-alkoxyalkyl, whereby at least one of the radicals R_{11}, R_{12} and R_{13} contains 1–30 C atoms.

15. A lubricant composition comprising a lubricating oil containing 0.001 to 5 percent, relevant to the oil, of a compound of formula I according to claim 1.

4,376,055

PROCESS FOR MAKING HIGHLY SULFURIZED OXYMOLYBDENUM ORGANO COMPOUNDS

Philip S. Korosec, Ballwin, Mo., and Litt Fredric A., University Heights, Ohio, assignors to Elco Corporation, Cleveland, Ohio

Filed Sep. 12, 1979, Ser. No. 74,901
Int. Cl.³ C10M 1/48
U.S. Cl. 252—32.7 E 4 Claims

1. A process for the preparation of a lubricating oil or grease having wear resistant, extreme pressure and fuel efficient char-

acteristics comprising the step of adding to a petroleum base or synthetic base oil or grease an effective amount of a sulfurized oxymolybdenum organophosphorodithioic compound which is the reaction product of the process which consists essentially of the steps of (A) reacting at reflux in an inert solvent for at least one hour in a temperature range of 160°–185° F. (1) an oxide of molybdenum which has been solubilized in the presence of a sulfurizing compound selected from the group consisting of sodium hydrosulfide and sodium monosulfide and (2) a dialkyldithiophosphoric acid, and then (B) recovering the reaction product.

4,376,056

FUEL ECONOMY IN INTERNAL COMBUSTION ENGINES

Timothy R. Erdman, San Rafael, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Continuation of Ser. No. 162,700, Jun. 24, 1980, Pat. No. 4,336,149, which is a continuation of Ser. No. 968,527, Dec. 11, 1978, abandoned. This application Apr. 5, 1982, Ser. No. 365,662

Int. Cl.³ C10M *3/18, 7/20*

U.S. Cl. 252—56 R **2 Claims**

1. A lubricating oil composition consisting essentially of an oil of lubricating viscosity and from 0.25 to 2 weight percent of pentaerythritol mono-oleate.

4,376,057

ETCHANT COMPOSITION AND USE THEREOF

Raymond W. Angelo, Endwell, and Peter Bakos, Endicott, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 26, 1980, Ser. No. 211,000

Int. Cl.³ C09K *13/08, 13/06*

U.S. Cl. 252—79.4 **11 Claims**

1. An acidic aqueous etchant composition having a pH of about 5 or less suitable for etching chrome containing water, about 2 to 50% by weight of hydrochloric acid, polyvinyl alcohol in an amount of about 1 to about 25% by weight and being sufficient to improve the uniformity of the etching, and transition metal ions in an amount of about 0.1 to about 8% by weight and being sufficient to accelerate the etching, wherein said transition metal ions are selected from the group of nickel, cobalt, and mixtures thereof.

4,376,058

MIXTURE OF ALIPHATIC C_{10} BRANCHED OLEFIN EPOXIDES AND USE THEREOF IN AUGMENTING OR ENHANCING THE AROMA OF PERFUMES AND/OR ARTICLES

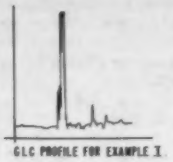
Richard M. Boden, Monmouth Beach; Lambert Dekker, Wyckoff; Frederick L. Schmitt, Holmdel, all of N.J., and Augustinus G. Van Loveren, Rye, N.Y., assignors to International Flavors & Fragrances Inc., New York, N.Y.

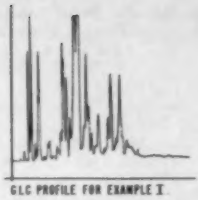
Division of Ser. No. 195,630, Oct. 9, 1980, Pat. No. 4,335,009, which is a continuation-in-part of Ser. No. 160,788, Jun. 19, 1980, Pat. No. 4,287,084. This application Feb. 18, 1982, Ser. No. 350,094

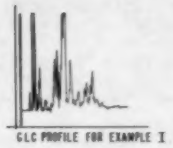
Int. Cl.³ C11D *3/50*

U.S. Cl. 252—174.11 **2 Claims**

1. A process for augmenting or enhancing the aroma of a solid or liquid anionic, cationic, nonionic or zwitterionic detergent comprising the step of adding to a solid or liquid anionic, cationic, nonionic or zwitterionic detergent base an aroma augmenting or enhancing quantity of at least one epoxide compound defined according to the structure:







wherein R_1, R_2, R_3, R_4 and R_5 are the same or different and each represents hydrogen or methyl with the proviso that (i) the sum total of carbon atoms in R_1, R_2, R_3, R_4 and R_5 is three, and (ii) R_1 and R_2 represent hydrogen when R_5 represents methyl, and (iii) when either R_1 or R_2 is methyl, R_5 is hydrogen.

4,376,059

PROCESS FOR PREPARING ARTIFICIAL RED CELLS

Thomas A. Davis, Scotch Plains, and William J. Asher, Fanwood, both of N.J., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Apr. 11, 1980, Ser. No. 139,454

Int. Cl.³ B01J *13/02;* **A01N** *25/28;* **A61K** *9/50, 9/64*

U.S. Cl. 252—316 **9 Claims**

1. A process for making artificial red cells comprising the steps of:

(a) emulsifying a stroma-free, aqueous hemoglobin solution in a surfactant-containing oil to form an emulsion comprising discrete microdroplets of said hemoglobin solution in a continuous phase of said oil;

(b) forming, in an aqueous suspending phase, liquid membrane capsules comprising globules of said emulsion formed in (a), said globules comprising an aqueous interior phase of discrete microdroplets of hemoglobin solution and an exterior oil phase immiscible with both said aqueous interior phase and said suspending phase and wherein said suspending phase contains a water soluble cross-linking agent capable of polymerizing hemoglobin;

(c) forming artificial red cells suspended in said globules of oil phase by maintaining said capsules in said aqueous suspending phase for a time sufficient for said cross-linking agent to polymerize hemoglobin at the surface of said hemoglobin solution microdroplets present in said capsules to form an artificial membrane around each of said microdroplets of hemoglobin solution;

(d) separating the artificial red cells from the oil phase containing the artificial red cells; and

(e) recovering the artificial red cells from the oil phase.

4,376,060

PROCESS FOR PREPARING LITHIUM SOAP GREASES CONTAINING BORATE SALT WITH HIGH DROPPING POINT

James F. Stadler, Bethel Park, Pa., assignor to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Nov. 4, 1981, Ser. No. 318,204
Int. Cl.³ C10M 1/20, 1/54
U.S. Cl. 252—42.1 10 Claims

1. In a process of preparing a lithium soap grease composition of high dropping point comprising a major portion of lubricating oil and a thickener system whose essential components include a lithium soap of C_{12} to C_{24} hydroxy fatty acid and a lithium salt of boric acid the improvement wherein the lithium salt of boric acid is formed in situ in the presence of an effective additive amount of water soluble polyhydroxy alcohol or phenol.

4,376,061

POLYMERIZING OLEFINS WITH A NOVEL CATALYST

Harold E. Swift, Gibsonia, and Richard W. Lunden, Pittsburgh, both of Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed Jan. 23, 1981, Ser. No. 227,691
Int. Cl.³ C08F 4/02, 4/64
U.S. Cl. 252—429 B 36 Claims

1. A solid, particulate, catalytic complex for the stereospecific polymerization of olefins prepared by a process comprising reducing $TiCl_4$ to a solid product based on $TiCl_3$, contacting the resultant reduced solid with a complexing agent to obtain a treated solid and contacting the treated solid with $TiCl_4$ in the presence of silica which has been treated with an alkylaluminum halide.

4,376,062

SPHEROIDAL POLYMERIZATION CATALYST, PROCESS FOR PREPARING, AND USE FOR ETHYLENE POLYMERIZATION

Anthony D. Hamer, and Frederick J. Karol, both of Belle Mead, N.J., assignors to Union Carbide Corporation, Danbury, Conn.

Division of Ser. No. 95,010, Nov. 28, 1979, Pat. No. 4,293,673, which is a continuation-in-part of Ser. No. 974,013, Dec. 28, 1978, abandoned. This application Mar. 31, 1981, Ser. No. 249,446
Int. Cl.³ C08F 4/64
U.S. Cl. 252—429 B 5 Claims

1. A catalyst composition produced by

(A) forming a spherical precursor composition of the formula:

$$Mg_mTi_1(OR)_nX_p[ED]_q[Filler]_r$$

wherein R is a C_1 to C_{14} aliphatic or aromatic hydrocarbon radical, or COR′ wherein R′ is a C_1 to C_{14} aliphatic or aromatic hydrocarbon radical, X is Cl, Br, I, or mixtures thereof, ED is an electron donor compound, Filler is an inert filler compound, and, based on the total weight of said composition,

m is ≥ 0.5 to ≤ 56,

n is 0 or 1,

p is ≥ 2 to ≤ 116,

q is ≥ 2 to ≤ 85, and

r has a value such that the percent filler is from about 10 to about 95 weight percent based on the total weight of said composition,

by forming a slurry or solution of at least one magnesium compound and at least one titanium compound and at least one filler compound in at least one electron donor compound so as to thereby form a slurry or solution of said precursor composition in said electron donor compound and spray drying said slurry or solution by atomization to form spherical particles of said precursor composition which have a particle size of from about 10 to about 200 microns,

said magnesium compound having the structure MgX_2,

said titanium compound having the structure $Ti(OR)_aX_b$

wherein a is 0, 1 or 2, b is 1 to 4 inclusive and $a+b=3$ or 4,

said electron donor compound being a liquid organic compound in which said magnesium compound and said titanium compound are soluble and which is selected from the group consisting of alkyl esters of aliphatic and aromatic carboxylic acids, aliphatic ethers, cyclic ethers and aliphatic ketones, and

(B) activating said precursor composition

either by partially activating it with >0 to ≤ 10 moles of activator compound per mol of Ti in said precursor composition, or

completely activating it with 10 to 500 mols of activator compound per mol of Ti in said precursor composition,

said activator compound having the formula

$$Al(R'')_cX'_dH_e$$

wherein X′ is Cl or OR‴, R″ and R‴ are the same or different, and are C_1 to C_{14} saturated hydrocarbon radicals, d is 0 to 1.5, e is 1 or 0 and $c+d+e=3$,

said activating being conducted after the recovery of said particles of said precursor composition by treating the precursor composition with said activator compound.

4,376,063

ANTIMONY HALIDE-ORGANIC PHOSPHONATE ESTER CATIONIC POLYMERIZATION CATALYSTS

Robert J. Balchunis, St. Paul, and Stephen W. Bany, North St. Paul, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 124,836, Feb. 26, 1980, Pat. No. 4,293,675. This application Apr. 16, 1981, Ser. No. 254,974
Int. Cl.³ B01J 31/22
U.S. Cl. 252—429 R 3 Claims

1. A catalytic composition of matter for cationic polymerization reactions comprising the 1:1 reaction product complex of

(a) an inorganic antimony halide compound selected from the class $SbCl_3$, $SbCl_5$ and SbF_5, and

(b) an organic phosphonate ester represented by the formula

$$R^2—P(OR^3)_2$$
(with O double-bonded to P)

wherein R^2 and R^3 are independently selected from (1) phenyl, and (2) alkenyl, halogenated alkyl or alkyl of one to 18 carbon atoms, said reaction product complex selected from the class of compounds having the formulas

$$SbCl_3.R^2—P(OR^3)_2,\ SbCl_5.R^2—P(OR^3)_2 \text{ and}$$

$$SbF_5.R^2—P(OR^3)_2,$$

wherein R^2 and R^3 are as defined above.

4,376,064

CATALYST AND PROCESS FOR PRODUCTION OF POLYOLEFINS OF IMPROVED MORPHOLOGY

Glen R. Hoff, Naperville, Ill., and Peter Fotis, Reading, Pa., assignors to Standard Oil Co. (Indiana), Chicago, Ill.

Filed May 26, 1981, Ser. No. 267,515
Int. Cl.³ C08F 4/64
U.S. Cl. 252—429 B 11 Claims

1. A catalyst composition comprising (A) an organometallic promoter and (B) a component prepared by contacting (1) a supported catalyst complex comprising an intimate association of at least one reduced Group IVB or VB metal halide, at least one divalent metal halide and at least one compound of aluminum with (2) at least one oxygenated compound of phosphorus having at least one oxygen atom double-bonded to phosphorus in an amount and under conditions effective to improve polymer morphology.

4,376,065

ORGANO ZIRCONIUM-CHROMIUM COMPOUND, CATALYST PREPARED THEREFROM AND POLYMERIZATION OF OLEFINS THEREWITH

Randall S. Shipley, Alvin, and Fred L. Vance, Jr., Lake Jackson, both of Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Jun. 1, 1981, Ser. No. 269,232
Int. Cl.³ C08F 4/64
U.S. Cl. 252—429 B 8 Claims

1. As a composition of matter, the reaction product of (1) a zirconium compound or mixture of such compounds thereof represented by the empirical formula $(RO)_mZrX_{4-m}$ wherein R is a monovalent hydrocarbyl group having from 1 to about 20 carbon atoms, X is a halogen, and m has a value from 0 to 4; with (2) an inorganic oxygen-containing chromium compound or mixture of such compounds represented by the empirical formulas CrO_3 or CrO_2X_2; wherein X is a halogen and wherein the mole ratio of component (2) to component (1) is of from about 0.05:1 to about 6:1.

4,376,066

METHOD FOR PREPARING A CATALYST FOR AN ISOTOPIC EXCHANGE COLUMN

Aime E. Bruggeman, Retie; Roger F. R. Leysen, Mol; Philippe Vermeiren, Wemmel, and Marcel Monsecour, Mol, all of Belgium, assignors to Studiecentrum voor Kernenergie, S.C.K., Brussels, Belgium

Filed Jul. 21, 1981, Ser. No. 285,483
Claims priority, application Belgium, Jul. 31, 1980, 884.563
Int. Cl.³ B01J 31/02; B01D 5/02
U.S. Cl. 252—430 10 Claims

1. A method for preparing a hydrophobic catalyst for an isotopic exchange column comprising the steps of dry-mixing 4 to 85 w.% carrier particles on which 0.5 to 10 w.% metal from group VIII of the periodic element system is fixed with 15 to 96 w.% particles from hydrophobic material which is
simultaneously a binder and may thus bind the carrier particles together,
subjecting the thus obtained mixture to an agglomeration step, breaking the agglomerates,
pressing the broken agglomerates into a cake, and
cutting catalyst particles from said cake.

4,376,067

CATALYTIC SUPPORTS WITH CONTROLLED PORE PROPERTIES

Roger F. Vogel, Butler, and George Marcelin, Pittsburgh, both of Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed Aug. 3, 1981, Ser. No. 289,539
Int. Cl.³ B01J 23/02, 23/06, 27/18
U.S. Cl. 252—437 12 Claims

1. A catalyst support comprising (A)(I) a Group IIB metal compound selected from the group consisting of zinc and cadmium compounds, (II) a combination of said zinc and cadmium compounds or (III) a combination of at least one of said Group IIB metals compounds with at least one Group IIA metal compound selected from the group consisting of magnesium, calcium, strontium and barium compounds; (B) alumina and (C) aluminum phosphate matrix, characterized after calcination at 500° C. for about 10 hours as amorphous, and having an average pore radius of from about 10 A to about 300 A, a surface area ranging from about 80 m^2/g to about 350 m^2/g, a pore volume of from about 0.3 cc/g to about 1.5 cc/g and wherein component (A) is present in an amount ranging from about 0.5 to about 75 mole percent, component (B) is present in an amount ranging from about two to about 90 mole percent and component (C) is present in an amount ranging from about three to about 95 mole percent.

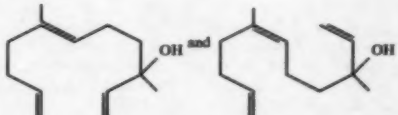
4,376,068

USE OF ISOMERIC FARNESENE PRODUCT-BY-PROCESS FOR AUGMENTING OR ENHANCING THE AROMA OF PERFUME COMPOSITIONS, COLOGNES AND PERFUMED ARTICLES

Braja D. Mookherjee, Holmdel; Robert W. Trenkle, Bricktown, both of N.J.; Bernard J. Chant, Rye, N.Y.; Anton van Ouwerkerk, Livingston, N.J.; Venkatesh Kamath, Red Bank, N.J., and Cynthia J. Mussinan, Bricktown, N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Filed Aug. 13, 1981, Ser. No. 292,392
Int. Cl.³ A61K 7/46
U.S. Cl. 252—522 R 11 Claims

1. A process for augmenting or enhancing the wet petal, white flower aroma of a consumable material selected from the group consisting of (a) perfume compositions, (b) colognes and (c) perfumed polymers comprising the step of intimately admixing with a perfume composition base, a cologne base or a polymer, an aroma augmenting or enhancing quantity of a farnesene isomer mixture produced according to the process of dehydrating a nerolidol isomer mixture containing nerolidol isomers defined according to the structures:



in the presence of a catalyst selected from the group consisting of potassium acid sulfate and paratoluene sulfonic acid at a temperature in the range of from 110° C. up to 200° C. and at a pressure in the range of from 1 mm/Hg pressure up to 200 atmospheres pressure, absolute during the reaction, simultaneously removing water of reaction from the reaction mass, and then distilling the resulting product at a temperature in the range of from 51° up to 103° C. and a pressure in the range of from 0.7 up to 2.0 mm/Hg, with the proviso that when a potassium acid sulfate catalyst is used, the temperature of reaction is in the range of 180°–200° C.; and with the further proviso that when using a paratoluene sulfonic acid catalyst, the reaction temperature is in the range of from 115° C. up to 200° C.

4,376,069

HYDROTROPIC CLEANER AND DEOXIDIZER

Richard D. Maggi, Oyster Bay, N.Y., assignor to Life Industries Corporation, Old Bethpage, N.Y.

Continuation-in-part of Ser. No. 85,003, Oct. 15, 1979, abandoned, which is a continuation-in-part of Ser. No. 937,527, Aug. 28, 1978, abandoned. This application Jan. 27, 1982, Ser. No. 343,028

Int. Cl.³ C11D 3/28, 3/10

U.S. Cl. 252—542 7 Claims

1. A detergent composition comprising (a) methyl-2-pyrrolidone; (b) an alkylaryl polyether alcohol obtainable as the reaction product of octylphenol and ethylene oxide and containing an average of five ethylene oxide units per molecule; (c) ethylene glycol monobutyl ether and (d) an alkylaryl polyether alcohol obtainable as the reaction product of octylphenol and ethylene oxide and containing an average of seven to eight ethylene oxide units per molecule.

4,376,070

CONTAINMENT OF NUCLEAR WASTE

James M. Pope, Monroeville, and Don E. Harrison, Murrysville, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jun. 25, 1980, Ser. No. 162,966

Int. Cl.³ G21F 9/16

U.S. Cl. 252—629 9 Claims

1. A method of immobilizing nuclear waste comprising:

(A) preparing a composition which comprises

(1) about 30% to about 85% by weight, calculated as SiO_2, of a silicon compound having the general formula $SiR_m(OR')_nX_p$ or $Si(OSiR_3)_4$ where each R is independently selected from alkyl to C_{10} and alkenyl to C_{10}, each R' is independently selected from R and aryl, each X is independently selected from chlorine and bromine, m is 0 to 3, n is 0 to 4, p is 0 to 1, and m+n+p equals 4;

(2) about 5% to about 30% by weight, calculated as Na_2O, of a sodium compound having the general formula NaOR'' or $NaZR'_3$, where each R'' is independently selected from R and hydrogen, and Z is carbon or boron;

(3) up to about 30% by weight, calculated as Al_2O_3, of an aluminum compound having the general formula $AlR'_q(OR'')_rX_s$ or $Mg(Al(OR)_4)_2$, q is 0 to 3, r is 0 to 3, s is 0 to 1, and q+r+s equals 3;

(4) about 5% to about 30% by weight, calculated as the corresponding oxide, of a compound selected from the group consisting of boron compounds having the general formula $BR'_q(OR'')_rX_s$, where q+r+s equals 3, alkaline earth metal compounds having the general formula $MR_t(OR'')_uX_v$, where M is calcium or magnesium, t is 0 to 2, u is 0 to 2, v is 0 to 1, and t+u+v equals 2, lithium compounds having the general formula LiOR, and mixtures thereof, said composition being at least partially hydrolyzed;

(B) mixing into said composition up to about to an equal amount by weight of said nuclear waste at up to 500° C. until the mixture is dry and organics have been removed; and

(C) melting said mixture at about 800° C. to 1300° C.

4,376,071

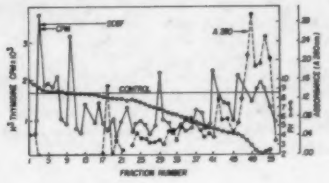
MITOGENIC SPINAL CORD GROWTH FACTOR

Thomas J. Jennings, Garden City, N.Y., and Allan Lipton, Hershey, Pa., assignors to Research Corporation, New York, N.Y.

Filed Aug. 21, 1980, Ser. No. 179,945

Int. Cl.³ A01N 63/02; A61K 35/12; C12N 5/00

U.S. Cl. 260—112 R 13 Claims



1. A substantially purified proteinaceous factor obtained from spinal cord which has mitogenic activity, a molecular weight of about 11,000, a pI of 9.6 and which is heat and acid labile.

4,376,072

METHOD OF PRODUCING MILK PROTEIN ISOLATES AND MILK PROTEIN/VEGETABLE PROTEIN ISOLATES AND COMPOSITIONS OF SAME

Philip B. Connolly, Sebastopol, Calif., assignor to New Zealand Milk Products, Inc., Petaluma, Calif.

Filed Nov. 17, 1980, Ser. No. 207,281

Int. Cl.³ A23J 1/20

U.S. Cl. 260—120 3 Claims

1. A protein composition obtained from the method comprising treating at about 55° C. a system of dairy whey and a normally acid insoluble protein having an isoelectric point of 4–5 by alkalizing the system to a pH of 9–11, acidifying the system to a pH of 2–4, adjusting the pH of the system to the isoelectric point of said protein, and separating and recovering the precipitated protein complex resulting therefrom.

4,376,073

METHOD AND APPARATUS FOR DESOLVENTIZING RESIDUAL SOLIDS AFTER OIL EXTRACTION THEREFROM

Richard D. Farmer, River Ridge, La., assignor to Bunge Corporation, New York, N.Y.

Filed Nov. 17, 1980, Ser. No. 207,668

Int. Cl.³ A23J 1/02, 1/14

U.S. Cl. 260—123.5 12 Claims

1. A process for extracting oils and fats from oleaginous vegetable and fatty animal material and treating defatted residual solids therefrom to form a proteinaceous concentrate comprising:

(a) contacting said oleaginous vegetable and fatty animal material with an extraction solvent flow under conditions to extract said oils and fats therefrom to form an oil-solvent miscella stream and extraction solvent impregnated defatted residual solids;

(b) separating said extraction solvent impregnated defatted residual solids from said oil-solvent miscella stream;

(c) contacting said oil-solvent miscella stream with steam under conditions to separate said oil from said extraction solvent;

(d) recovering solvent-laden waste steam resulting from step (c);

(e) combining said solvent-laden waste steam resulting from step (c) with an additional steam; and

(f) applying said combined additional steam and solvent laden waste steam directly to said extraction solvent impregnated defatted residual solids under conditions to

vaporize said extraction solvent from said defatted residual solids.

4,376,074

IMIDAZODIAZEPINES AND PROCESSES THEREFOR

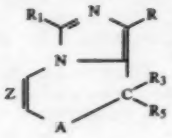
Armin Walser, West Caldwell, and Rodney I. Fryer, North Caldwell, both of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 905,820, May 15, 1978, Pat. No. 4,280,957, which is a continuation of Ser. No. 663,660, Mar. 4, 1976, abandoned, which is a continuation-in-part of Ser. No. 602,691, Aug. 7, 1975, abandoned, which is a continuation-in-part of Ser. No. 504,924, Sep. 11, 1974, abandoned. This application Mar. 12, 1981, Ser. No. 242,851

Int. Cl.³ C07D *487/22, 487/04;* A61K *31/55*

U.S. Cl. 260—244.4 3 Claims

1. A compound of the formula



wherein A is

R_1 is selected from the group consisting of hydrogen, lower alkyl, hydroxy lower alkyl,

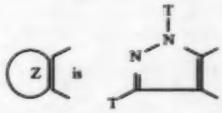
lower alkyl, phenyl, C_1 to C_7 alkoxy lower alkyl, halo lower alkyl, amino lower alkyl, mono- or di-C_1 to C_7 alkyl or phenyl, chlorophenyl or tolyl substituted amino lower alkyl, pyridyl, benzyl and the group

wherein R^{65} is hydrogen or lower alkyl; R_2 is selected from the group consisting of hydrogen, lower alkyl, hydroxy lower alkyl, C_1 to C_7 acyloxy lower alkyl, C_1 to C_7 alkoxy lower alkyl, halo lower alkyl, cyano, cyano lower alkyl, mono- or di-C_1 to C_7 alkyl or phenyl, chlorophenyl or tolyl substituted amino lower alkyl, amino lower alkyl, mono- or di-C_1 to C_7 alkyl or phenyl, chlorophenyl or tolyl substituted amino, the group COOR where R is hydrogen or lower alkyl, the group

where R is hydrogen or lower alkyl, or the group R-C═N-R' wherein R' is hydrogen, lower alkyl, hydroxy, phenyl, alkoxy, amino, mono or di-alkylamino and arylamino and R is hydrogen or lower alkyl, the group

(where R^{85}, R^{86} are hydrogen, lower alkyl, aryl, hydroxy lower alkyl, lower alkenyl, or together R^{85} and R^{86} with the nitrogen atom may form a part of a 5- or 6-membered heterocyclic ring selected from the group consisting of morpholino, piperazino, piperidino and pyrrolidino and the group $(CH_2)_nNR^{95}R^{96}$ where R^{95} and R^{96} are hydrogen, lower alkyl, hydroxy lower alkyl, lower alkenyl, aryl or together R^{95} and R^{96} with the nitrogen atom form a part of a 5- or 6-membered heterocyclic ring selected from the group consisting of morpholino, piperazino, piperidino and pyrrolidino), the group

where R^{10}, R^{11}, R^{12} are hydrogen or lower alkyl or the group $(CH_2)_nNR^{13}R^{14}$ where n is 1 to 4 and R^{13}, R^{14} are hydrogen, or lower alkyl with the limitation that where R^{10}, R^{11} or R^{12} is $(CH_2)_nNR^{13}R^{14}$, then the remaining substituents are hydrogen or lower alkyl; R_3 is selected from the group consisting of hydrogen or lower alkyl; R_5 is hydrogen; R_6 is selected from the group consisting of phenyl, mono R_6 is selected from the group consisting of phenyl, mono-halo or mononitro substituted phenyl, di-halo or halo-nitro substituted phenyl, pyridyl and mono-halo or mono-nitro substituted pyridyl, $R^{20}$is C_1 to C_6 or hydrogen; and



wherein T is hydrogen or lower alkyl and the pharmaceutically acceptable salts thereof.

4,376,075

PROCESS FOR PRODUCING IMIDAZODIAZEPINES

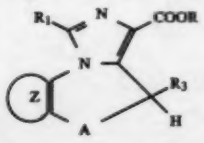
Armin Walser, West Caldwell, and Rodney I. Fryer, North Caldwell, both of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 905,820, May 15, 1978, Pat. No. 4,280,957, which is a continuation of Ser. No. 663,660, Mar. 4, 1978, abandoned, which is a continuation-in-part of Ser. No. 602,691, Aug. 7, 1975, abandoned, which is a continuation-in-part of Ser. No. 504,924, Sep. 11, 1974, abandoned. This application Mar. 12, 1981, Ser. No. 243,025

Int. Cl.³ C07D *487/04, 487/14*

U.S. Cl. 260—244.4 1 Claim

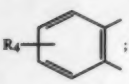
1. A process to produce a compound of the formula

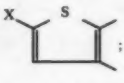


wherein A is

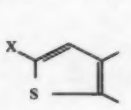
R_3 is selected from the group consisting of hydrogen and lower alkyl; R is lower alkyl; R_1 is selected from the group consisting of hydrogen, lower alkyl C_1 to C_7 acyloxy lower alkyl, phenyl, C_1 to C_7 alkoxy lower alkyl, halo lower alkyl, mono- or di-C_1 to C_7 alkyl or phenyl, chlorophenyl or tolyl substituted amino lower alkyl, pyridyl, tolyl, hydroxy lower alkyl and the group ROOC wherein R is lower alkyl; R_4 is selected from the group consisting of hydrogen, halogen, nitro, cyano, trifluoromethyl, lower alkyl, mono-or di-C_1 to C_7 alkyl or phenyl, chlorophenyl or tolyl substituted amino, amino, hydroxy lower alkyl and lower alkanoyl; R_6 is selected from the group consisting of phenyl, mono-halo or mono-nitro substituted phenyl, dihalo or halo-nitro substituted phenyl, pyridyl and mono-halo or mono-nitro substituted pyridyl; and

is selected from the group consisting of

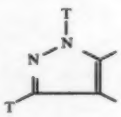




wherein X is chlorine, bromine iodine or hydrogen



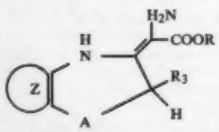
and



wherein X is chlorine bromine, iodine or hydrogen

wherein T is hydrogen or lower alkyl

which comprises the stepwise reaction of a compound of the formula



wherein R_3 is hydrogen or lower alkyl; R is lower alkyl; A is

R_4, R_6 and

are as above

(a) with an aldehyde of the formula

R_1CHO

wherein R_1 is as above;

(b) oxidizing the product of (a) to form the final product.

4,376,076

BIS-ESTERS OF 1,1-ALKANEDIOLS WITH 6-BETA-HYDROXYMETHYLPENICILLANIC ACID 1,1-DIOXIDE

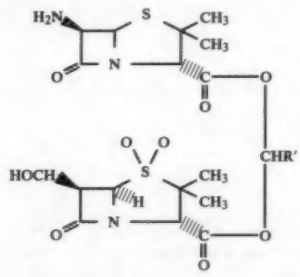
Michael S. Kellogg, Waterford, Conn., assignor to Pfizer Inc., New York, N.Y.

Division of Ser. No. 246,505, Mar. 23, 1981, Pat. No. 4,342,768, which is a continuation-in-part of Ser. No. 86,864, Oct. 22, 1979, Pat. No. 4,287,181. This application May 20, 1982, Ser. No. 380,174

Int. Cl.³ C07D *499/00*; A61K *31/43*

U.S. Cl. 260—245.2 R **10 Claims**

1. A compound of the formula



wherein R′ is hydrogen or methyl.

4,376,077

SULPHO GROUP-CONTAINING ANTHRAQUINONE DYESTUFFS

Wolfgang Schoenauer, Riehen, Switzerland, and Roland Wald, Huningue, France, assignors to Sandoz Ltd., Basel, Switzerland

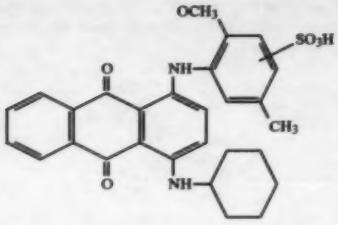
Continuation of Ser. No. 852,816, Nov. 18, 1977, abandoned, which is a continuation of Ser. No. 775,423, Mar. 8, 1977, abandoned, which is a continuation of Ser. No. 601,880, Aug. 4, 1975, abandoned, which is a continuation-in-part of Ser. No. 440,435, Feb. 7, 1974, abandoned. This application Nov. 6, 1978, Ser. No. 958,182

Claims priority, application Switzerland, Feb. 8, 1973, 1802/73

Int. Cl.³ C07C *143/665*

U.S. Cl. 260—373 **1 Claim**

1. A compound of the formula



or the salt form of said compound, the cation of which is non-chromophoric.

4,376,078

REACTION PRODUCT SALTS OF EPOXIDES, POLYALKYLENEPOLY-AMINOAMIDES, FATTY AMINES AND FATTY ACIDS OR FATTY ACID ESTERS, HALIDES, ISOCYANATES OR KETENE DIMERS

Rosemarie Töpfl, Dornach, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Mar. 23, 1981, Ser. No. 246,353

Claims priority, application Switzerland, Mar. 28, 1980, 2491/80

Int. Cl.³ C07C *103/00*

U.S. Cl. 260—404.5 36 Claims

1. A reaction product salt of (A) 1.0 epoxy group equivalent of a diglycidyl ether of 2,2-bis-(4'-hydroxyphenyl)-propane, (B) 0.2 to 1.0 amino group equivalent of a polyalkylenepolyaminoamide of (B') a polymerised, unsaturated fatty acid which is derived from fatty acids having 12 to 24 carbon atoms and (B'') an aliphatic polyalkylenepolyamine having 4 to 12 carbon atoms, (C) 0.3 to 0.6 amino group equivalent of at least one primary fatty amine having 12 to 24 carbon atoms, (D) 0 to 1.0 mol, per epoxy group equivalent of component (A), of an epihalogenohydrin and (E) 0.01 to 0.5 mol, per mol of amino group equivalent of components (B) and (C), of at least one saturated or unsaturated fatty acid having 12 to 24 carbon atoms, or an alkyl ester, having 1 to 4 carbon atoms in the alkyl radical, isocyanate, halide or ketene dimer thereof, the reaction being carried out in the presence of an inert, organic solvent or in a melt at temperatures up to 110° C., and it being ensured, by adding an acid, at the latest when the reactions have ended, that a sample of the reaction mixture diluted with water to 10 to 40 percent by weight has a pH value of 2 to 8, a salt being formed.

4,376,079

PROCESS FOR THE CONTINUOUS PRODUCTION OF WATER INSOLUBLE METAL SOAPS

Friedrich J. Zucker; Georg Osthaus, both of Neuss; Gernot Hänig, Bad Harzburg, and Karl Culemeyer, Pinneberg, all of Fed. Rep. of Germany, assignors to Supraton F. J. Zucker GmbH, Neuss, Fed. Rep. of Germany

Filed Apr. 28, 1981, Ser. No. 258,511

Claims priority, application Fed. Rep. of Germany, May 3, 1980, 3017121

Int. Cl.³ C11B *3/06*; C08H *17/36*

U.S. Cl. 260—413 11 Claims

1. A process of producing a water insoluble metal soap comprising:

A. producing an aqueous dispersion of a basic metal carbonate by adding a metal oxide or hydroxide to water and then simultaneously adding aqueous ammonia and gaseous carbon dioxide thereto;

B. producing a saponified aliphatic acid aqueous emulsion by emulsifying a liquid aliphatic acid with water with stirring and simultaneously adding a small amount of aqueous ammonia thereto; and

C. reacting the intermediate products from steps A and B to produce the desired aliphatic acid metal soap by combining the said intermediate products under high shearing conditions in a sheer machine having a rotor and a stator.

4,376,080

PROCESS FOR PREPARING MALONONITRILE

Toshikazu Hamamoto, and Katsumasa Harada, both of Ube, Japan, assignors to Ube Industries, Ltd., Ube, Japan

Filed Nov. 24, 1981, Ser. No. 324,424

Claims priority, application Japan, Dec. 2, 1980, 55-169162; Mar. 2, 1981, 56-28333

Int. Cl.³ C07C *120/00, 121/22*

U.S. Cl. 260—465.8 R 20 Claims

1. A process for preparing malononitrile which comprises reacting, in a solvent and at a pH between 3 and 12, diazoacetonitrile with hydrogen cyanide in the presence of between 0.001 and 2 gram-atoms of a copper compound in terms of metallic copper per mole of said diazoacetonitrile, said copper compound being selected from the group consisting of monovalent or divalent copper sulfate, copper carbonate, copper acetate, copper cyanide, copper perchlorate and copper chloride.

4,376,081

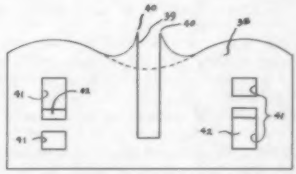
TOWER PACKING

Max Leva, 5600 Munhall Rd., Pittsburgh, Pa. 15217

Filed May 16, 1980, Ser. No. 150,443

Int. Cl.³ B01F *3/04*

U.S. Cl. 261—94 4 Claims



1. A tower packing element for use in towers for distillations, gas absorptions and related mass transfer operations, comprising a base which has a surface that is generated by the rotation of a continuously progressing two-dimensional curve through an angle of from approximately 10 degrees to approximately 180 degrees around a straight line which lies within the plane of said curve to form a base surface consisting of at least two demi-tori in horizontal sequence, said base being provided with slots and having tongues depending from said base.

4,376,082

INSULATIVE CAP FOR EVAPORATIVE COOLER

Robert M. Heck, 7418 S. 42nd St., Phoenix, Ariz. 85040

Filed Aug. 24, 1981, Ser. No. 295,847

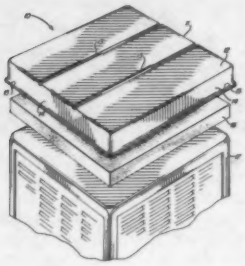
Int. Cl.³ B01F *3/04*

U.S. Cl. 261—127 10 Claims

1. In an evaporative cooler comprising an outer casing with a surface exposed to the heat loading effects of the environment, the improvement comprising:

thermal insulation means coupled to said exposed surface of said outer casing of said evaporative cooler for insulating

same from the temperature effects of exposure to sunlight and a heated environment; and



weather protection means coupled to both said thermal insulation means and said outer casing for protecting said thermal insulation means from the environment.

4,376,083

PROCESS FOR THE PREPARATION OF ALUMINUM-CONTAINING HIGH-ENERGY EXPLOSIVE COMPOSITIONS

Kare Ulsteen, Saetre i Hurum, Norway, assignor to Dyno Industrier A.S., Oslo, Norway

Filed Jan. 26, 1981, Ser. No. 228,056

Claims priority, application Norway, Feb. 29, 1980, 800582

Int. Cl.³ C06B *21/00*

U.S. Cl. 264—3 D **15 Claims**

1. A process for the preparation of a castable, high-energy explosive composition comprising trinitrotoluene (TNT), RDX or HMX crystalline explosive and aluminum powder, comprising the following steps:

A. dispersing wax and crystals of RDX or HMX in water with heavy stirring at a temperature above the melting point of the wax, then adding aluminum powder, treated in order to tolerate water, to the dispersion, thereby forming a dispersed mixture, cooling the mixture and separating it in the form of granules; and

B. combining TNT with said dispersed mixture or with said granules, thereby obtaining said castable composition.

2. A process according to claim 1, wherein the TNT of step B is separately melted and dispersed in hot water with heavy stirring, the temperature is reduced to below 80° C., granules of TNT are separated and are combined with the granules obtained from the dispersed mixture of step A.

4,376,084

PROCESS FOR THE PRODUCTION OF HETEROGENEOUS ARTICLES

Geoffrey Cowen, Runcorn, England; Philip Norton-Berry, Llandegla, Wales, and Margaret L. Steel, Runcorn, England, assignors to Imperial Chemical Industries Limited, London, England

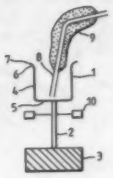
Filed Feb. 12, 1981, Ser. No. 235,156

Claims priority, application United Kingdom, Feb. 21, 1980, 8005839

Int. Cl.³ B22D *23/08*

U.S. Cl. 264—8 **12 Claims**

1. A process for the production of heterogeneous articles containing a plurality of solid phases, wherein the process comprises supplying a thermoplastic first material in particulate solid form to a surface of rotation of a rotating body, the surface of rotation having a coaxial discharge rim around its periphery and the first material being supplied to the surface so that it is caused to travel across said surface towards the rim by forces generated by the rotation of the body, melting the thermoplastic first material as it travels across the surface, supplying a second solid material to the surface so that it also travels across the surface in like manner to reach the rim with the



molten first material, discharging the materials together from the rim of the surface by centrifugal forces, and causing or allowing the thermoplastic first material to solidify and form the heterogeneous article thereby.

4,376,085

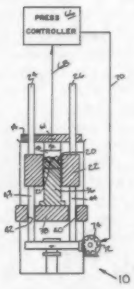
METHOD FOR PRODUCING UNIFORM DENSITY AND WEIGHT BRIQUETTES

Stephen W. Burry, Geneva, Ind., assignor to CTS Corporation, Elkhart, Ind.

Filed Jun. 4, 1980, Ser. No. 156,387

Int. Cl.³ B29C *7/00*

U.S. Cl. 264—40.4 **9 Claims**



1. In a process for making briquettes from loose ceramic particles compressed together under compacting force in an activated press by first placing said particles in a die cavity of said press where said particles are compacted together into a self supporting briquette and the briquette is thereafter removed from said die cavity, and the process is repeated in successive compacting cycles to produce said briquettes, the improvement comprising controlling the size of the die cavity through a closed-loop feedback control network to produce substantially constant density, size and weight briquettes and comprising the steps of:

(a) as part of a compacting cycle, placing said loose ceramic particles in a die cavity of a standard size in accordance with a predetermined standard compacting force value for producing a briquette having a predetermined density, size, and weight,

(b) exerting compacting force during a compacting cycle upon said particles in said die cavity to product a briquette thereafter removed from said die cavity,

(c) continuously sensing and measuring compacting force during the compacting cycle of steps (a) and (b) to determine a peak compacting force value effected during the compacting cycle and during succeeding compacting cycles,

(d) storing within a storage means peak compacting force signals sensed and measured during the successive compacting cycles and averaging a selected number of stored peak compacting force signals to determine an average peak compacting force value,

(e) comparing the average peak compacting force value to said predetermined standard compacting force value to determine the difference therefrom,

(f) correlating the difference between the average value of the stored peak compacting force signals and the predetermined standard compacting force value to determine the amount of adjustment of die cavity size necessary to produce said briquettes of predetermined density, size, and weight,

(g) sending a signal to an adjusting means to adjust the size of said die cavity, and

(h) periodically effecting adjustment of said die cavity size by changing the cavity size through the closed-loop feedback control network to produce said briquettes of substantially constant density, size and weight.

4,376,086
PROCESS FOR THE PRODUCTION OF CALCIUM SILICATE-CONTAINING STONE BLANKS USEFUL IN CONSTRUCTING BUILDING WALLS

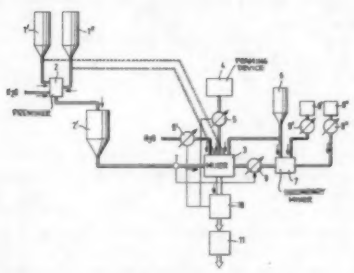
Peter Schubert; Hermann Pfeifer, both of Aachen; Volker Hermann, Bad Schwalbach; Reimund Keller, Hattingen, and Eckhard Schulz, Wallenhorst, all of Fed. Rep. of Germany, assignors to SICOWA Verfahrenstechnik für Baustoffe GmbH, Aachen, Fed. Rep. of Germany

Filed Apr. 22, 1981, Ser. No. 256,614

Claims priority, application Fed. Rep. of Germany, Apr. 22, 1980, 3015432

Int. Cl.³ B29H *7/20*

U.S. Cl. 264—42 14 Claims



1. A method for producing stones on calcium silicate-basis, which are useful in constructing building walls, the method comprising the following steps:

a. forming a crude mixture of granulated silicate-containing material, lime, water, cement and a foaming agent, using such an amount of water that the crude mixture is pourable and by using a cement composition starting with strength-forming reactions substantially at elevated temperatures,

b. pouring the crude mixture of step (a) into molds,

c. heating the crude mixture in the molds to a temperature of between 45° C. and 90° C.—substantially without compacting the crude mixture to start the strength-forming reactions of the cement,

d. subjecting the crude mixture in the molds to the elevated temperature for 10 seconds to 5 minutes until the stone blanks formed in the molds from the crude mixture by heating to the elevated temperature achieves the desired blank strength necessary for removing the blanks from the molds,

e. removing the blanks from the molds and transporting the blanks to an autoclave, and

f. steam hardening the stone blanks in the autoclave.

4,376,087
PROCESSING OF VIDEO DISCS

Eugene S. Poliniak, Willingboro, and Pabitra Datta, Cranbury, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed May 26, 1981, Ser. No. 266,986

Int. Cl.³ B29D *17/00*

U.S. Cl. 264—107 14 Claims

1. In the manufacture of a conductive, high density information disc having video and audio information in the form of geometric variations in an information track which can be reconstituted in electrical signal form with a playback stylus, wherein a conductive plastic is compression molded to form said high density information disc, the improvement which comprises treating the surfaces of said high density information disc with a fluorinating reagent selected from the group consisting of fluorosilicic acid, fluoroboric acid, hydrofluoric acid, and antimony pentafluoride to render said high density information disc substantially resistant to and stable under conditions of high temperature and high relative humidity.

4,376,088
PROCESS FOR PREPARING A PARTICLE BOARD USING A SELF-RELEASING BINDER COMPRISING A POLYISOCYANATE AND A SULFUR-CONTAINING RELEASE AGENT

Richard A. Prather, Houston, Tex., assignor to The Upjohn Company, Kalamazoo, Mich.

Filed Mar. 18, 1981, Ser. No. 245,167

Int. Cl.³ B29J *5/02*

U.S. Cl. 264—109 12 Claims

1. In a process for the preparation of particle board wherein particles of material capable of being compacted are contacted with a polyisocyanate and the treated particles are subsequently formed into boards by the application of heat and pressure, the improvement which comprises imparting self-releasing properties to said particle board by contacting said particles, in addition to the treatment with said polyisocyanate, with from about 0.1 to about 20 parts, per 100 parts by weight of said polyisocyanate, of a sulfur-containing compound selected from the group consisting of

(a) organic mono- and poly-sulfonic acids of the formulae:

$$R{-}SO_3H \text{ and } R'{-}(SO_3H)_n$$

(I) (II)

wherein n is an integer having a value of at least 2,

(b) organic sulfonic acid anhydrides of the formula:

$$R_1{-}SO_2{-}O{-}SO_2{-}R_2 \quad \text{(III)}$$

(c) N,N-disubstituted taurates of the formula:

$$\begin{array}{l} O \\ \| \\ RC{-}N{-}CH_2{-}CH_2{-}SO_3H \\ | \\ R_3 \end{array} \quad \text{(IV)}$$

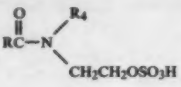
(d) sulfo esters of the formula:

$$\begin{array}{l} O \\ \| \\ RC{-}O{-}CH_2CH_2SO_3H \end{array} \quad \text{(V)}$$

(e) organic hydrogen sulfates of the formula:

$$RO{-}SO_3H \quad \text{(VI)}$$

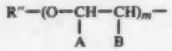
(f) alkanolamido alkane sulfate esters of the formula:



(VII)

and

(g) alkali metal, alkaline earth metal, and heavy metal salts of the acids of formulae (I), (II), (IV), (V), (VI) and (VII); wherein, in the above formulae, R, R_1 and R_2 each independently represent alkyl having at least 6 carbon atoms, alkenyl having at least 6 carbon atoms, alkenyl substituted by carboxy and having at least 4 carbon atoms, alkyl as above defined and substituted by from 1 to 2 acyloxy groups wherein the acyl group is the residue of an aliphatic monocarboxylic acid having at least 2 carbon atoms, aryl, aryl substituted by at least one alkyl, and



wherein R'' is selected from the class consisting of alkyl, aryl and aryl substituted by at least one alkyl, one of A and B represents hydrogen and the other is selected from the class consisting of hydrogen, methyl, chloromethyl and 2,2,2-trichloromethyl, and m is a number having an average value from 1 to 25; R_3 is selected from the class consisting of methyl and ethyl; R_4 is selected from the class consisting of hydrogen and $-CH_2CH_2OSO_3H$; and R' corresponds to the radical R having n-1 additional SO_3H groups substituted therein.

4,376,089

PARTICLE BOARD PROCESS USING POLYMERIC ISOCYANATE/RELEASE AGENT

Ben R. Bogner, Wheaton, and Francis C. Grant-Acquah, Northbrook, both of Ill., assignors to The Quaker Oats Company, Chicago, Ill.

Filed Jun. 15, 1981, Ser. No. 273,513
Int. Cl.³ B29J 5/00
U.S. Cl. 264—109 **3 Claims**

1. A process for the preparation of a particle board comprising the steps of mixing furfural and a phosphate to form a stable release agent solution, blending a polyisocyanate with said release agent solution to form a binder system, mixing said binder system with wood chip particles and molding said mixture of said binder system and cellulosic material under heat to form a board of good strength and water resistance.

4,376,090

INJECTION MOLDING SYSTEM

Paul Marcus, 85 Pascack Rd., Pearl River, N.Y. 10965

Continuation of Ser. No. 43,184, May 29, 1979, abandoned. This application Jan. 15, 1982, Ser. No. 339,666
Int. Cl.³ B29C 17/07
U.S. Cl. 264—530 **11 Claims**

1. A method of making a selected oriented finished product by use of a single injection blow molding apparatus,

the apparatus comprising:

a support structure;

a first platen on the support structure;

an injection molding means and a first and second blow molding means being in line and on opposed sides of the injection molding means, the injection molding means and first and second blow molding means being mounted on the first platen;

a second platen on the support structure being axially reciprocal and laterally reciprocal relative to the first platen;

a first and second neck bushing assembly and a first and second pick-off bushing assembly on the second platen, the bushing assemblies all being in line, the first and second pick-off bushing assemblies being on opposite sides of the first and second neck bushing assemblies;

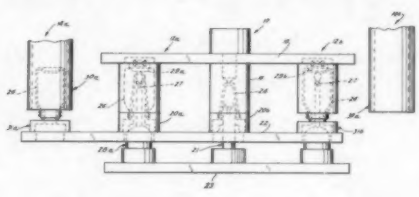
a third platen on the support structure being axially reciprocal relative to the first and second platens;

a first core rod assembly and a first and second blow rod assembly on the third platen the first and second blow rod assemblies being in line and on opposed sides of the first core rod assembly, the first core rod assembly and injection molding means cooperating alternately with the first and second neck bushing assemblies in forming an injection molding station for molding a parison into a selected configuration, the first and second blow rod assemblies and the first and second blow molds cooperating with the first and second neck bushing assemblies for respectively forming first and second blow molding stations for blow molding the finished product and alternately cooperating with the first and second pick-off bushing assemblies for respectively forming first and second cooling stations for cooling the finished product;

the method comprising:

axially reciprocating the platens relatively towards one another from a platen open position to a platen closed position;

while the platens are in the platen closed position injection molding a first parison into a selected configuration at the injection mold station defined by the relatively axially reciprocal injection molding means and the first core rod assembly and first neck bushing assembly reciprocal between an open and closed position as the platens reciprocate between their open and closed positions, respectively;



axially reciprocating the platens relatively away from one another from the platen closed position to the platen open position;

moving the first parison axially from the injection molding means and first core rod assembly at the injection molding station when the platens are reciprocated from their closed position to their open position and the injection molding means and first core rod assembly are relatively reciprocated to an open position and supporting the first parison between the open injection molding means and first core rod assembly by the first neck bushing assembly;

laterally reciprocating the second platen in a first direction to transfer laterally the first parison to the first blow molding station by the first neck bushing assembly and to axially align the first neck bushing assembly with the first blow molding means and first blow rod assembly;

conditioning the first parison to orientation temperature after injection molding and prior to blow molding;

axially reciprocating the platens to their closed position;

while the platens are in their closed position, blow molding the first parison while at orientation temperature at the first blow molding station into the configuration of the first finished product, the first blow molding station defined by the relatively axially reciprocal first blow molding means and the first blow rod assembly and first neck bushing assembly reciprocal between an open and closed position as the platens reciprocate between their open and closed position, respectively;

the first parison and a first previously made finished product

being respectively supported and moved axially and laterally in the first direction between the injection molding station and the first blow molding station and between the first blow molding station and a first finished product removal station by the first neck bushing assembly and the first pick-off bushing assembly, respectively, when the platens are axially reciprocal to their open positions and the second platen is laterally reciprocated in the first direction;

the first parison being transferred from the injection molding station by axially removing the first core rod assembly from the first parison and the first parison from the injection molding means and transferring the first parison to the first blow molding station, the first previously made finished product being transferred from the first blow molding station by axially removing the first blow rod assembly from the first previously finished product and the first previously made finished product from the first blow molding means and transferring the first previously made finished product to a position for removal;

after the first parison is transferred to the first blow molding station, a second parison and second previously made finished product being respectively supported and moved axially and laterally in a second direction directly opposite to the first lateral direction between the injection molding station and second blow molding station and between the second blow molding station and a second finished product removal station, by the second neck bushing assembly and the second pick-off bushing assembly, respectively, when the platens axially reciprocate to their open position and the second platen is laterally reciprocated in the second direction;

the second parison being transferred from the injection molding station by axially removing the first core rod assembly from the second parison and the second parison from the injection molding means and transferring the second parison to the second blow molding station and the second previously made finished product being transferred from the second blow molding station by axially removing the second blow rod assembly from the second previously made finished product and the second previously made finished product from the second blow molding means and transferring the second previously made finished product to a position for removal; and

two stage cooling for the blown finished product being provided by enclosing the blow molding means and blow rod assembly about the finished product twice before the finished product is removed from the apparatus.

4,376,091

MECHANICAL STRAINER UNIT

Robert J. Netkowicz; Ira H. Schnall, and John B. Kraeling, Jr., all of Erie, Pa., assignors to Zurn Industries, Inc., Erie, Pa.

Division of Ser. No. 26,032, Apr. 2, 1979, abandoned. This application Aug. 28, 1980, Ser. No. 181,987

Int. Cl.³ G21C *19/32*

U.S. Cl. 376—283 **3 Claims**

1. In a nuclear reactor suppression chamber having at least one conduit exiting therefrom and a strainer secured to said conduit within the chamber, said improvement comprising said strainer having:

A. a plurality of centrally apertured plates positioned along a common axis and in parallel and spaced relationship, each of said plates including a plurality of perforations of a given diameter so that liquid can pass through the plates and said central apertures being in communication with the conduit;

B. spacers positioned between adjacent plates to maintain the plates in spaced relationship and form communicating passages of a predetermined size with the central apertures;

C. inner and outer rings alternately positioned in the spaces between plates, the inner rings having a diameter smaller than the outer rings and positioned adjacent the central apertures preventing entrance from the communicating passages to the central apertures and forming a first straining area limited by adjacent plates and the inner rings, the outer rings positioned adjacent the periphery of the plates preventing entrance to the communicating passages and forming a second straining area limited by adjacent plates and the outer rings; and

D. connecting means joining the strainer unit to the conduit and maintaining the strainer in assembled relationship.

whereby the flow of liquid from the suppression chamber is initially into the first straining area, through the perforations of the plates into the second straining area and into the central apertures and the conduit.

4,376,092

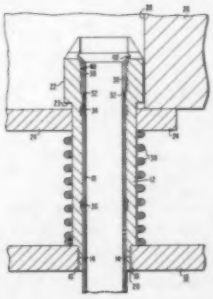
NUCLEAR FUEL ASSEMBLY WEAR SLEEVE

Stanley Kmonk, and Dennis J. Cadwell, both of Plum Borough, Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Dec. 10, 1979, Ser. No. 102,046

Int. Cl.³ G21C *1/04*

U.S. Cl. 376—353 **8 Claims**



1. An improved control rod guide tube for a nuclear reactor fuel assembly comprising a tube adapted to extend the length of said fuel assembly;

a housing enclosing the upper part of said tube, said housing extending through a supporting spider at its upper end and being attached at its lower end to a top nozzle adapter plate, and means securing the tube to said housing;

a wear sleeve in said tube having an inner diameter only slightly greater than a control rod adapted to be positioned in the upper end of said tube,

said sleeve being of a length which extends inwardy into the tube a distance beyond the lower surface of said adapter plate in the top nozzle;

threaded means fastening said wear sleeve to said housing at a location above said top nozzle adapter plate; and

said wear sleeve comprising a material highly resistant to wear, the wear action on said sleeve being caused by a control rod moving relative thereto during operation of

the reactor in which the control rod guide tube is adapted to be used.

4,376,093

LOW ANTIMONY ALLOY

Raymond D. Prengaman, Arlington, Tex., assignor to RSR Corporation, Dallas, Tex.

Filed Jun. 3, 1981, Ser. No. 270,134

Int. Cl.³ C22F 11/10; C22C 11/08

U.S. Cl. 420—573 **2 Claims**

1. A lead alloy for use in lead-acid batteries consisting essentially of 0.6 to 1.1 weight percent antimony, 0.06 to 0.25 weight percent arsenic, 0.1 to 0.4 weight percent tin, 0.06 to 0.11 weight percent copper, and the balance lead.

4,376,094

METHOD OF DISINFECTING AND A METHOD FOR DESTROYING BACTERIA AND FUNGI USING 2-SUBSTITUTED GLUTARALDEHYDES

Wolfgang Münzenmaier, Wennigsen; Heinz Eggensperger, Hamburg; Helmut H. Ehlers, Hamburg; Wolfgang Beilfuss, Hamburg; Lothar Bücklers, Norderstedt, and Hans-Peter Harke, Hamburg, all of Fed. Rep. of Germany, assignors to Sterling Drug Inc., New York, N.Y.

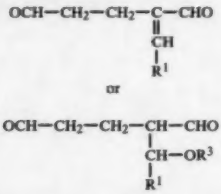
Filed Aug. 21, 1981, Ser. No. 294,892

Claims priority, application Fed. Rep. of Germany, Aug. 30, 1980, 3032795

Int. Cl.³ A61L 2/18

U.S. Cl. 422—36 **20 Claims**

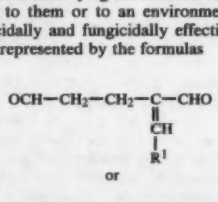
1. A method for disinfecting an inanimate surface contaminated with deleterious microorganisms which comprises contacting said surface with an amount effective for disinfection thereof of a glutaraldehyde represented by the formulas



or

wherein R^1 is selected from the group consisting of alkyl having from one to twelve carbon atoms, lower-alkoxyalkyl having from two to twelve carbon atoms, cycloalkyl having from three to twelve ring carbon atoms, and alkyl-substituted cycloalkyl having from three to eight ring carbon atoms and a total of from four to ten carbon atoms, and R^3 is alkyl having from one to four carbon atoms.

11. A method for destroying bacteria and fungi which comprises applying to them or to an environment inhabited by them a bactericidally and fungicidally effective amount of a glutaraldehyde represented by the formulas



or

wherein R^1 is selected from the froup consisting of alkyl having from one to twelve carbon atoms, lower-alkoxyalkyl having from two to twelve carbon atoms, cycloalkyl having from three to twelve ring carbon atoms, and alkyl-substituted cycloalkyl having from three to eight ring carbon atoms and a total of from four to ten carbon atoms, and R^3 is alkyl having from one to four carbon atoms.

4,376,095

HOLLOW FIBER-TYPE ARTIFICIAL LUNG HAVING ENCLOSED HEAT EXCHANGER

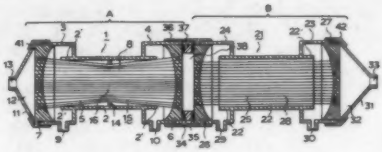
Hiroshi Hasegawa, Hiratsuka, Japan, assignor to Terumo Corporation, Tokyo, Japan

Filed Aug. 14, 1981, Ser. No. 292,941

Claims priority, application Japan, Aug. 25, 1980, 55-115868

Int. Cl.³ A61M 1/03

U.S. Cl. 422—46 **9 Claims**



1. A hollow fiber-type artificial lung having an enclosed heat exchanger comprising:

(a) an oxygenator section, said oxygenator section including: a first housing; a bundle of a multiplicity of hollow fibers for gas exchange, said hollow fibers having mean pore sizes of 200 to 2,000 angstroms and being gas permeable and liquid impermeable, said hollow fibers being physically separated from one another and arranged side by side within and along the longitudinal direction of said first housing; first and second walls liquid-tightly carrying said hollow fibers at the end portions of said hollow fibers with said end portions of said hollow fibers left open, said first and second walls defining an oxygen chamber with the inner wall of said first housing and outer wall surfaces of said hollow fibers; oxygen inlet and outlet means communicating with said oxygen chamber; and a first blood circulation opening communicating with an interstitial space of said hollow fibers externally of said first wall;

(b) a multiple tube-type heat exchanger section, said heat exchanger section including: a second housing; a multiplicity of tubes physically separated from one another and arranged side by side within and along the longitudinal direction of said second housing; third and fourth walls liquid-tightly carrying said tubes at the end portions of said tubes, with said end portions of said tubes left open, said third and fourth walls defining at heat exchange medium chamber with the inner wall of said second housing and the outer wall surfaces of said tubes; heat exchange medium inlet and outlet means communicating with said heat exchange medium chamber; and a second blood circulation opening communicating with an interstitial space of said tubes externally of said fourth wall; and

(c) a blood chamber defining means defining a blood chamber and coupling said oxygenator section directly to said heat exchanger section in substantially coaxial relation and with said open ends of said hollow fibers in face-to-face relation with said open ends of said heat exchanger tubes, said blood chamber being interposed between said second wall of said oxygenator section and said third wall of said heat exchanger section and said second and third walls defining end walls of said blood chamber, said blood chamber communicating said oxygenator and heat exchanger by facing end openings in said hollow fibers carried by said second wall and end openings in said tubes carried by said third wall, and said blood chamber serving as a blood flow buffer chamber so that the processing capability of said oxygenator section and that of said heat

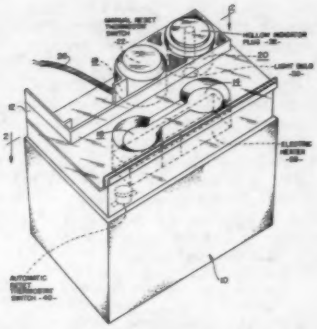
exchanger section may be determined independently of each other.

4,376,096

HEATING UNIT FOR DISINFECTING PURPOSES

John G. Bowen, Santa Ana, Calif., assignor to Rincon Industries, Inc., Los Angeles, Calif.

Filed Nov. 2, 1981, Ser. No. 317,520
Int. Cl.³ A61L 2/04
U.S. Cl. 422—116 8 Claims



1. An electrically energized heating unit for disinfecting soft lenses, dental hand pieces, baby bottles, and the like comprising: a bowl; an incubator supported on the bowl and containing at least one well extending into said bowl; electrically energized heating means mounted in said bowl; electric leads extending into said bowl for supplying electrical energy to said heating means; a heat conductive medium contained in said bowl to be heated by said heating means for conducting heat from said heating means to the outer surface of the well of said incubator so as to introduce heat into said well, said medium being a heat conductive wax to be heated from a solid state to a liquid state by said electrically energized heating means for conducting heat uniformly from said heating means to the outer surface of the well of said incubator; a manually resettable thermostatic switch connected to said leads and thermally coupled to the medium in said bowl; and an automatically resettable thermostatic switch connected in series with said manually resettable thermostatic switch and thermally coupled to said medium in said bowl, said automatically resettable thermostatic switch being imbedded in said wax adjacent to said electrically energized heating means, and said manually resettable thermostatic switch having a temperature set point higher than that of said automatic thermostatic switch and being imbedded in said wax at a point displaced a sufficient distance from said electrical heating means to permit said manually resettable thermostatic switch to act as a timer means to limit the time of energization of said heating means.

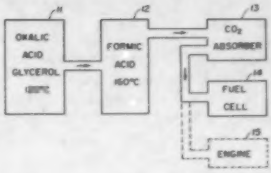
4,376,097

HYDROGEN GENERATOR FOR MOTOR VEHICLE

Melvin Emelock, 1748 NW. 72nd Ave., Plantation, Fla. 33313

Filed Feb. 27, 1981, Ser. No. 238,934
Int. Cl.³ B01J 19/24
U.S. Cl. 422—189 12 Claims

12. A hydrogen generating apparatus comprising a first chamber means containing oxalic acid, first heating means associated with said first chamber means for heating said oxalic acid to a temperature whereby the oxalic acid decomposes to form formic acid gas and carbon dioxide, conducting means to transport said formic acid gas from said first chamber means to a second chamber means, and a second heating means associated with said second chamber means for heating said formic acid so as to form hydrogen gas and carbon dioxide.



4,376,098

TWO-STAGE URANIUM IN SITU LEACHING PROCESS

Tsoung-Yuan Yan, Philadelphia, Pa., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Aug. 25, 1980, Ser. No. 181,047
Int. Cl.³ C22B 60/02; C01G 43/00; E21B 43/28
U.S. Cl. 423—20 7 Claims

1. A process for the in situ leaching of uranium values from calcite-containing formations wherein the formation is penetrated by at least one injection well and at least one production well in communication with the injection well, which comprises;

(a) a first step wherein labile calcite in the formation is removed by pumping through, and removing from, the formation a carbonic acid solution that attacks and dissolves a substantial portion of said labile calcite, wherein the carbonic acid solution has a pH not less than 3; and

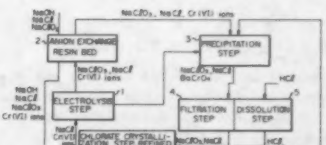
(b) a second subsequent step wherein the uranium values are leached from the formation by pumping through, and removing from, said formation an aqueous leaching solution containing about 0.1 to 1% by weight sulfuric acid and an oxidant.

4,376,099

PROCESS FOR RECOVERING CR(VI) IONS FROM A CHLORATE CELL LIQUOR

Hideo Yamamoto, Shibukawa; Isao Isa, Misatomachi, and Morioki Shibuya, Shibukawa, all of Japan, assignors to The Japan Carlit Co., Ltd., Tokyo, Japan

Filed Aug. 24, 1981, Ser. No. 295,699
Claims priority, application Japan, Sep. 2, 1980, 55-121430; Dec. 29, 1980, 55-187567
Int. Cl.³ C01G 37/14
U.S. Cl. 423—54 8 Claims



1. A process for recovering Cr(VI) ions which comprises the steps of:

(1) acidifying a Cr(VI) ions-containing chlorate cell liquor containing an alkali metal chlorate and an alkali metal chloride to a pH-value of from 1 to 5 and passing through

an anion exchange resin bed to produce a chlorate cell liquor from which most of Cr(VI) ions are separated;

(2) regenerating the anion exchange resin bed by passing through it an eluent of an aqueous alkali metal hydroxide solution of 0.05–1.0 mole per liter containing an alkali metal chloride of 1.0–5.0 moles per liter and an alkali metal chlorate of 0.1–5.0 moles per liter to remove the adsorbed Cr(VI) ions therefrom; and

(3) returning the effluent from the regeneration stage of the anion exchange resin bed to an electrolysis step.

6. A process for recovering Cr(VI) ions which comprises the steps of:

(1) adding an aqueous alkali metal chloride and/or an alkali metal chlorate solution containing a barium salt soluble in water to a Cr(VI) ion-containing chlorate cell liquor containing an alkali metal chlorate and an alkali metal chloride at a pH-value above 7 to precipitate barium chromate;

(2) filtering the precipitate of barium chromate to produce a Cr(VI) ion-substantially free chlorate cell liquor;

(3) dissolving the precipitate of barium chromate in an aqueous hydrochloric acid solution weaker than 6 normal;

(4) passing said aqueous hydrochloric acid solution containing barium ions and Cr(VI) ions through a cation exchange resin bed to adsorb barium ions and obtaining an aqueous hydrochloric acid solution containing Cr(VI) ions;

(5) regenerating said cation exchange resin bed by passing through it an eluent of an aqueous alkali metal chloride and/or alkali metal chlorate solution to remove barium ions therefrom;

(6) returning said aqueous alkali metal chloride and/or alkali metal chlorate solution containing barium ions to the precipitation step described in the step (1); and

(7) returning the aqueous hydrochloric acid solution containing Cr(VI) ions to an electrolysis step for manufacturing an alkali metal chlorate.

4,376,100

LITHIUM HALIDE BRINE PURIFICATION

John M. Lee, and William C. Bauman, both of Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Nov. 23, 1981, Ser. No. 324,300
Int. Cl.³ C01D 15/00
U.S. Cl. 423—179.5 13 Claims

1. A method for leaching Li^+ values from a macroporous resin/aluminate composite which contains contaminated brine, said resin/aluminate composite comprisng an anion exchange resin having crystalline $LiX.2Al(OH)_3$ dispersed therein, where X is halide, and being substantially loaded with respect to Li^+ values,

said method comprising a pre-wash of the composite with a substantially pure contaminant free, concentrated alkali metal halide solution to substantially wash the contaminated brine from the composite without significantly removing Li^+ values, and

water-leaching the substantially pure alkali metal halide solution and a substantial amount of Li^+ values from the composite, leaving the composite substantially unloaded, but not completely unloaded, with respect to Li^+ values.

4,376,101

PROCESS FOR REMOVING ACID GASES USING A BASIC SALT ACTIVATED WITH A NON-STERICALLY HINDERED DIAMINE

Guido Sartori, Linden; Chang J. Kim, Somerset; Michael T. Melchior, Scotch Plains, and David W. Savage, Summit, all of N.J., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Nov. 13, 1981, Ser. No. 321,059
Int. Cl.³ B01D 53/34; C09K 3/00
U.S. Cl. 423—223 15 Claims

1. A process for the removal of CO_2 from a gaseous stream containing CO_2 which comprises (1) in an absorption step, absorbing CO_2 from said gaseous stream with an aqueous absorbing solution comprising (a) a basic alkali metal salt or hydroxide selected from the group consisting of alkali metal bicarbonates, carbonates, hydroxides, borates, phosphates and their mixtures, and (b) an activator or promoter system for said basic alkali metal salt or hydroxide comprising (i) at least one non-sterically hindered diamine which is defined as a compound containing both a primary and a tertiary amino moiety wherein the primary amino moiety is attached to a primary carbon atom, and (ii) an amino acid which has the capability to increase the solubility of said diamines in alkaline aqueous conditions at elevated temperatures, and (2) in a desorption and regeneration step desorbing at least a portion of the absorbed CO_2 from said absorbing solution.

4,376,102

PROCESS FOR REMOVING ACID GASES USING A BASIC SALT ACTIVATED WITH A DIAMINOALCOHOL

Warren A. Thaler, Aberdeen; Guido Sartori, Linden, and Chang J. Kim, Somerset, all of N.J., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Dec. 2, 1981, Ser. No. 326,596
Int. Cl.³ B01D 53/34; C09K 3/00
U.S. Cl. 423—223 15 Claims

1. A process for the removal of CO_2 from a gaseous stream containing CO_2 which comprises (1) in an absorption step, absorbing CO_2 from said gaseous stream with an aqueous absorbing solution comprising (a) a basic alkali metal salt or hydroxide selected from the group consisting of alkali metal bicarbonates, carbonates, hydroxides, borates, phosphates and their mixtures, and (b) an activator or promoter system for said basic alkali metal salt or hydroxide comprising (i) at least one diaminoalcohol of the following general formula:

$$H_2N—(CH_2)_4—NRR'$$

wherein R and R′ each independently represent a C_1–C_6 alkyl group and either R or R′ or both R and R′ have a terminal or pendant hydroxyl group and (ii) an amino acid which has the capability to increase the solubility of said diaminoalcohols in alkaline aqueous conditions at elevated temperatures, and (2) in a desorption and regeneration step, desorbing at least a portion of the absorbed CO_2 from said absorbing solution.

4,376,103

REMOVING SULFUR OXIDES FROM A GAS

Ralph J. Bertolacini, Naperville; Eugene H. Hirschberg, Park Forest, and Frank S. Modica, Downers Grove, all of Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Filed Oct. 26, 1981, Ser. No. 314,579
Int. Cl.³ C01B 17/00; B01J 8/00
U.S. Cl. 423—244 18 Claims

1. A process for removing sulfur oxides from a gas which comprises:

(a) absorbing the sulfur oxides from the gas with absorbents which comprise an exhaustively-exchanged rare-earth-form zeolite having greater than 90 percent of the occupied sites exchanged by rare earth metal cations and a free form of an inorganic oxide selected from the group con-

sisting of the oxides of aluminum, magnesium, zinc, titanium, and calcium; and then

(b) removing the absorbed sulfur oxides from the absorbents as a sulfur-containing gas which comprises hydrogen sulfide by contacting the absorbents with a hydrocarbon in the presence of a cracking catalyst.

4,376,104
METHOD FOR PREPARING CRYSTALLINE ALUMINOSILICATES

William J. Ball, Capel, and David G. Stewart, Epsom, both of England, assignors to The British Petroleum Company Limited, London, England

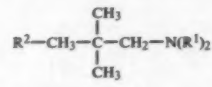
Continuation-in-part of Ser. No. 101,843, Dec. 10, 1979, abandoned. This application Jun. 23, 1981, Ser. No. 276,522

Claims priority, application United Kingdom, Jan. 5, 1979, 7900330

Int. Cl.³ C01B *33/28*

U.S. Cl. 423—329 **4 Claims**

1. A method for preparing a crystalline aluminosilicate having a high silica to alumina molar ratio which method comprises mixing a source of silica, a source of alumina, a source of alkali metal, water and at least one substituted neopentylamine according to Formula (I):



(I)

wherein R^2 is either —OH or —NH_2 and R′ is an alkyl group containing from 1 to 6 carbon atoms, the ratio of said source of silica to said source of alumina being at least 10:1 based on the equivalent moles of silica and alumina in said respective sources, maintaining said mixture at elevated temperature and recovering the crystalline aluminosilicate so formed.

4,376,105
PROCESS FOR PRODUCING NITROUS OXIDE

Hiroshi Matuda; Takamoto Nishimura; Yoshiyuki Tanaka, and Yoshihiko Hatabu, all of Ube, Japan, assignors to Ube Industries, Ltd., Yamaguchi, Japan

Filed Sep. 3, 1981, Ser. No. 299,221

Claims priority, application Japan, Sep. 9, 1980, 55-124075

Int. Cl.³ C01B *21/22*

U.S. Cl. 423—400 **11 Claims**

1. A process for producing nitrous oxide substantially devoid of nitrogen monoxide and nitrogen dioxide comprising

(a) dissolving urea in sulphuric acid having a concentration of at least 98% by weight;

(b) adding nitric acid to the resulting solution; and

(c) heating said solution to a temperature of between 40° C. and 100° C. to produce a nitric oxide containing mixture

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4,376,106
PROCESS FOR PRODUCING Y-TYPE ZEOLITE

Isao Miyanohara, Kudamatsu; Shinichi Hashimoto, and Hiroshi Miyazaki, both of Nanyo, all of Japan, assignors to Toyo Soda Manufacturing Co., Ltd., Nanyo, Japan

Continuation of Ser. No. 117,837, Jan. 20, 1980, abandoned. This application Sep. 14, 1981, Ser. No. 301,749

Claims priority, application Japan, Feb. 7, 1979, 54-12215; Mar. 2, 1979, 54-23394

Int. Cl.³ C01B *33/28*

U.S. Cl. 423—429 **5 Claims**

1. A process for producing a Y-type zeolite which consists essentially of the steps of:

incorporating an aqueous alkali silicate solution with an aqueous alkali aluminate solution in the presence of an alkali in such an amount that the ratio of M_2O (M: an alkali metal) to Al_2O_3, present in the resulting incorporated solution, is in the range of from about 7 to about 30 by mole and the ratio of SiO_2 to Al_2O_3, present in the resulting incorporated solution, is in the range of from 2 to 10 by mole, forming a gel having a SiO_2/Al_2O_3 molar ratio of from about 2.7 to about 3.0 in the incorporated solution, by maintaining the incorporated solution at a temperature of of from 40° C. to 70° C. for a period of at least 20 minutes, separating the gel from the mother liquor by filtration; and then,

incorporating the separated gel in an aqueous solution of an alkali silicate or a mixture of an alkali silicate and an alkali to obtain a slurry having the following oxide molar ratios:

M_2O/SiO_2: 0.25 to 0.50

SiO_2/Al_2O_3: 6 to 20

H_2O/M_2O: 20 to 80

wherein M is an alkali metal, followed by forming Y-type zeolite crystals in the slurry.

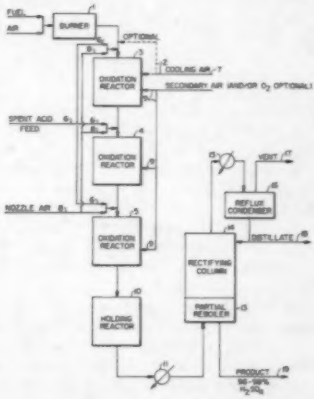
4,376,107
PROCESS FOR THE REGENERATION OF SPENT SULFURIC ACID

John H. Morgenthaler, 1965 Woodbury Ct., Walnut Creek, Calif. 94596

Filed Jun. 11, 1981, Ser. No. 272,685

Int. Cl.³ C10G *17/00*; C01B *17/90, 17/74*

U.S. Cl. 423—531 **14 Claims**



1. A process for the regeneration and concentration of spent sulfuric acid containing a substantial amount oxidizable organic impurities, which recovers over 90 percent of the sulfuric acid content of the feed as sulfuric acid while minimizing decomposition of sulfur trioxide to sulfur dioxide comprising:

(a) providing at least one reactor vessel containing hot turbulent combustion products,

(b) providing a regulated supply of oxygen to the reactor vessel,

(c) atomizing spent sulfuric acid into the reactor vessel in droplets having mean droplet diameters less than 50 microns,

(d) maintaining the temperature in the reactor vessel within the range 500° to less than 800° C.

(e) withdrawing reaction products containing more than 0% and up to 10% free oxygen from the vessel at a rate such that the residence time of the spent acid mixture in the reactor is limited to that required to substantially complete the oxidation of the organic components,

(f) removing the resulting mixture from the reactor vessel to a separate vessel and there cooling the mixture to condense water vapor and absorb sulfur trioxide in the condensed water, and

(g) removing water from the condensate to produce the desired acid concentration.

4,376,108

PROCESS AND APPARATUS FOR RECLAIMING SULFUR-CONTAINING WASTE MATERIALS

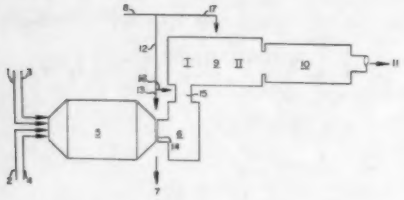
Norbert Lowiciki; Joachim Wolf, and Wolfgang Schwarz, all of Duisburg, Fed. Rep. of Germany, assignors to Grillo-Werke AG, Duisburg-Hamborn, Fed. Rep. of Germany

Filed Nov. 20, 1980, Ser. No. 208,536

Claims priority, application Fed. Rep. of Germany, Nov. 24, 1979, 2947497

Int. Cl.³ C01B *17/50;* C01G *17/00*

U.S. Cl. 423—540 12 Claims



1. A process of producing a sulfur dioxide-containing gas from a sulfur-containing waste or spent material, comprising:

feeding the sulfur-containing material, in a first stage, into a rotary furnace containing a coke bed at a temperature of at least 400° C. together with a sufficient amount of air in the range of about 25 to 55% of the total amount of air supplied in the whole or overall process to form a reducing gas so that the resulting reducing separation gas mixture formed in the furnace is heated to about 800° C. to 1100° C.;

feeding the reducing separation gas mixture, in a second stage, from the rotary furnace to an intermediate combustion chamber and adding to the reducing gas about 10 to 15% of the total amount of air required in the whole process, and maintaining a volume velocity per hour of about 200 to 400 Nm^3 gas/m^3 of combustion space as the temperature of the gas mixture increases to about 1150° C. to 1350° C.;

feeding the gas from the intermediate combustion chamber, in a third stage, to the forward combustion space of a secondary combustion chamber and adding to the gas about 20 to 45% of the total amount of air required in the whole process thereby forming a volume velocity per hour of 50 to 180 Nm^3 gas/m^3 of combustion space in the forward combustion space of the secondary combustion chamber as the separation gas cools to a temperature of about 1000° C. to 1200° C.;

in a fourth stage, feeding the remaining portion of the total air required in the whole process into the center portion of the secondary combustion chamber into admixture with the separation gas therein so that the gas admixture is at about 1000° C. to 1200° C. and a volume velocity per hour of 150 to 400 Nm^3 gas/m^3 of combustion space is thereby obtained;

removing the resulting sulfur dioxide-containing separation gas from the secondary combustion chamber; and

with the total amount of air supplied in stages one to four providing the separation gas with excess oxygen up to about a 3% oxygen surplus.

4,376,109

PROCESS AND APPARATUS FOR DISPOSAL OF NOXIOUS VAPORS EMANATING FROM WORT AND MASH DURING PRODUCTION OF BEER IN BREWERY INSTALLATIONS

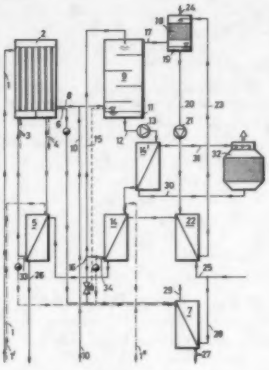
Erhard Wolter, Dortmund; Ludwig Wiegleb, Unna-Massen; Roland Krüger; Heinz Ludwig, both of Dortmund, and Klaus Ehrlinger, Fröndenberg, all of Fed. Rep. of Germany, assignors to Holstein & Kappert GmbH and Dortmunder Actien-Brauerei, both of Dortmund, Fed. Rep. of Germany

Filed Jun. 30, 1981, Ser. No. 279,047

Claims priority, application Fed. Rep. of Germany, Jul. 1, 1980, 3024809

Int. Cl.³ C01B *0/00*

U.S. Cl. 423—659 18 Claims



1. A process for disposal of noxious vapors emanating in brewery installations from cooking of wort and mash during the production of beer and for recovery of excess energy therefrom comprising the steps of: cooking wort and mash and developing vapors therefrom; passing said vapors emanating from said cooking of wort through first condenser means; passing said vapors emanating from said cooking of mash through second condenser means; passing at least part of the exhaust emitted from said first condenser means through said second condenser means; and recovering a vapor from said process.

4,376,110

IMMUNOMETRIC ASSAYS USING MONOCLONAL ANTIBODIES

Gary S. David, La Jolla, and Howard E. Greene, Carlsbad, both of Calif., assignors to Hybritech, Incorporated, La Jolla, Calif.

Filed Aug. 4, 1980, Ser. No. 175,133

Int. Cl.³ G01N *33/54, 33/56*

U.S. Cl. 436—513 29 Claims

1. A process for the determination of the presence of concentration of an antigenic substance in a fluid comprising the steps:

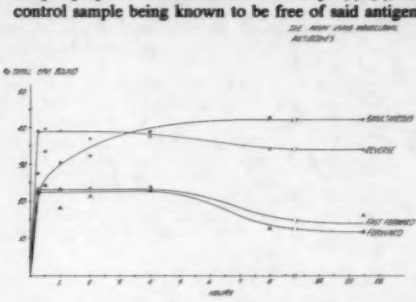
(a) contacting a sample of the fluid with a measured amount of a soluble first monoclonal antibody to the antigenic substance in order to form a soluble complex of the antibody and antigenic substance present in said sample, said first monoclonal antibody being labelled;

(b) contacting the soluble complex with a second monoclonal antibody to the antigenic substance, said second monoclonal antibody being bound to a solid carrier, said solid carrier being insoluble in said fluid, in order to form an insoluble complex of said first monoclonal antibody, said antigenic substance and said second monoclonal antibody bound to said solid carrier;

(c) separating said solid carrier from the fluid sample and unreacted labelled antibody;

(d) measuring either the amount of labelled antibody associated with the solid carrier or the amount of unreacted labelled antibody; and

(e) relating the amount of labelled antibody measured with the amount of labelled antibody measured for a control sample prepared in accordance with steps (a)–(d), said control sample being known to be free of said antigenic



substance, to determine the presence of antigenic substance in said fluid sample, or relating the amount of labelled antibody measured with the amount of labelled antibody measured for samples containing known amounts of antigenic substance prepared in accordance with steps (a)–(d) to determine the concentration of antigenic substance in said fluid sample, the first and second monoclonal antibodies having an affinity for the antigenic substance of at least about 10^8 liters/mole.

4,376,111

TILTING UNITS

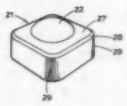
Geoffrey D. Tovey, Harpenden, England, assignor to Smith Kline & French Laboratories Limited, Welwyn Garden City, England

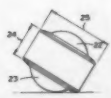
Filed Jun. 3, 1981, Ser. No. 270,181

Claims priority, application United Kingdom, Dec. 4, 1980, 80997904; Dec. 5, 1980, 8038993; Apr. 28, 1981, 8112987

Int. Cl.³ A61K *9/00, 9/20*

U.S. Cl. 424—15 **1 Claim**





1. An orally administrable pharmaceutical dosage unit which is more easily picked up because it rests in a tilted position on a horizontal flat surface, said unit having a shape comprising a right parallelipiped main body and having two equal larger faces and two projections which act as fulcra on which said unit can tilt, each of which projection is a dome-shaped stud and is loacted centrally on each of said larger faces and the shape of said unit is such that its most stable position on a horizontal flat surface is a tilted position.

4,376,112

ENCAPSULATED EFFICACIOUS ZINC PHOSPHIDE RODENTICIDE

George T. Miller, Lewiston, N.Y., assignor to Occidental Chemical Corporation, Niagara Falls, N.Y.

Filed Apr. 23, 1981, Ser. No. 256,742

Int. Cl.³ A01N *59/26*

U.S. Cl. 424—17 **10 Claims**

1. A rodenticide comprising a lethal amount of zinc phosphide coated with a thermoplastic polyamide polymer which allows phosphine to be released in the stomach of the rodent due to reaction between the acidic liquid in the stomach and the zinc phosphide, said polyamide polymer being present in the range of from about 2% of about 10% by weight of zinc phosphide.

4,376,113

STABLE SUSPENSIONS AND POWDERS OF STABLE MICROCAPSULES AND THEIR PREPARATION

Jean-Claude Suglia, La Destrousse, and Colette Meinard, Marseilles, both of France, assignors to Roussel Uclaf, Paris, France

Filed Aug. 26, 1980, Ser. No. 181,359

Claims priority, application France, Aug. 30, 1979, 79 21743

Int. Cl.³ A01N *25/28*; A61K *9/34, 9/50*; B01J *13/02*

U.S. Cl. 424—34 **25 Claims**

1. A process for the preparation of stable suspensions and powders of stable microcapsules containing at least one active material, having a variable porosity comprising preparing a colloidal solution of equal parts by weight of gelatin and acacia gum with a total concentration of 4 to 6% by weight of the final emulsion, preparing an oil solution, suspension or emulsion of the active material at a concentration of 1 to 5% by weight of the final emulsion and containing a variable amount of organosoluble ethyl hydroxyethylcellulose, mixing the said two compositions with stirring at a temperature near 50° C. in the presence of an emulsifyng agent to form an "oil in water" emulsion, effecting consecutively coacervation and microencapsulation of the emulsified droplets containing the active material by adjusting the pH to 4.2 to 4.4 by addition of an acid and then cooling the mixture to about 20° C. with stirring, reticulating the walls of the formed microcapsules by reaction with glutaric aldehyde and tannin with stirring at about 20° C. and either forming a concentrated suspension of microcapsules by slow addition at 20° C. of a water soluble ethyl hydroxyethylcellulose to the reticulated microcapsules or adding an antiagglomeration agent with stirring to the reticulated microcapsules at 20° C. and drying the resulting powder.

17. Stable suspensions or powders of stable microcapsules produced by the process of claim 1.

18. A suspension or powder of claim 17 wherein the microencapsulated active ingredient is a pyrethrinoid derivative.

4,376,114

COPOLYMERS OF N-VINYL PYRROLIDONE AND A VINYLIC, ALLYLIC OR METHALLYLIC ESTER OF A CYCLIC α- OR β- CARBOXYLIC ACID; AND COSMETIC COMPOSITIONS CONTAINING THE SAME

Bernard Jacquet, Antony; Christos Papantoniou, Montmorency; Guy Vanlerberghe, Montjay La Tour, and Jean Mondet, Sevran, all of France, assignors to Societe Anonyme dite: L'Oreal, Paris, France

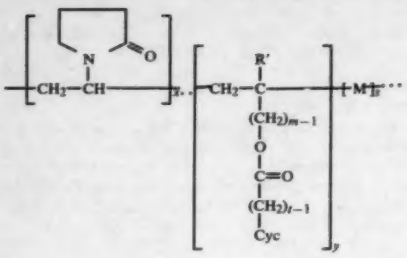
Division of Ser. No. 118,634, Feb. 4, 1980, Pat. No. 4,321,348. This application Oct. 21, 1981, Ser. No. 313,488

Claims priority, application France, Feb. 8, 1979, 79 03261

Int. Cl.³ A61K *7/11*

U.S. Cl. 424—47 **11 Claims**

1. A cosmetic composition in the form of hair setting lotions, aerosol lacquers, rinses or shampoos for treating the hair comprising in a cosmetic vehicle an effective amount of at least one copolymer consisting of units of the formula



wherein

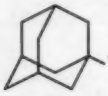
R′ represents hydrogen or methyl,

m is 1 or 2

t is 1 or 2,

when t=1, Cyc represents

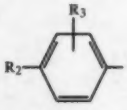
(i) a radical of the formula



(ii) a radical of the formula

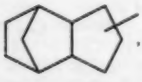
wherein R_1 represents hydrogen or methyl, and p is 1 or 2,

(iii) a radical of the formula

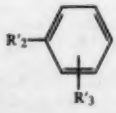


wherein R_2 represents hydrogen, methyl, ethyl, tert. butyl, ethoxy, butoxy or dodecoxy, and R_3 represents hydrogen, alkyl having 1–4 carbon atoms or alkoxy having 1–4 carbon atoms, or

(iv) a radical of the formula



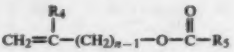
and when t=2, Cyc represents a radical of the formula



wherein R'_2 and R'_3 have the same meanings as those for R_2 and R_3, respectively,

M is a unit derived from a monomer selected from the group consisting of

(i′) a monomer having the formula



wherein n is 1 or 2, R_4 represents hydrogen or methyl and R_5 represents linear or branched alkyl having 1–21 carbon atoms,

(ii′) a monomer having the formula $CH_2{=}CH{-}OR_6$ wherein R_6 is linear or branched alkyl having 6–18 carbon atoms, and

(iii′) a monomer having the formula $CH_2{=}CH{-}(CH_2)_s{-}CH_3$, wherein s is a whole number from 3 to 15,

x represents from 20 to 90 weight percent,

y represents from 10 to 80 weight percent, and

z represents from 0 to 70 weight percent, with the proviso that the total sum of non-homopolymerizable monomers does not exceed 50 mole percent of the total monomers in said copolymer.

4,376,115

METHOD AND COMPOSITION FOR TREATING TEETH AND METHOD FOR PREPARING SAME

Howard S. McCrorey, P.O. Box 4, Hudson, Wyo. 82515

Continuation of Ser. No. 175,600, Aug. 5, 1980, abandoned. This application Sep. 25, 1981, Ser. No. 305,730

Int. Cl.³ A61K *33/30*

U.S. Cl. 424—145 **10 Claims**

1. A method for preparing a composition for treating teeth to reduce bacterial growth thereon comprising the steps of:

a. exposing crystalline zinc chloride to air to liquify the same,

b. mixing together about 10% to 20% by weight of powdered blood root and about 5% and 15% by weight of powdered galangal root to about 70% to 80% by weight of liquified zinc chloride; and

c. intermittently and thoroughly mixing together the liquified zinc chloride and the mixture of powdered blood root and powdered galangal root over a period of time sufficient to permit aging of the mixture including solution of soluble components.

4,376,116

POLYAMINE BIOSYNTHESIS INHIBITORS

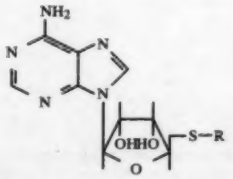
James K. Coward, and Kuo-Chang Tang, both of Troy, N.Y., assignors to Research Corporation, New York, N.Y.

Filed Sep. 1, 1981, Ser. No. 298,325

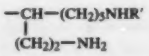
Int. Cl.³ A61K *31/70;* **C07H** *19/16*

U.S. Cl. 424—180 **4 Claims**

1. A compound having the formula:



wherein R is



wherein R′ is hydrogen or aminopropyl and salts thereof.

3. A method of treating a subject having cystic fibrosis, comprising:

administering to said subject a pharmaceutically effective amount of a pharmaceutical composition containing the compound of claim 1.

4. A method of treating a subject having a parasitic infection, comprising:

administering to said subject a pharmaceutically effective amount of a pharmaceutical composition containing the compound of claim 1.

4,376,117
CREATINOL-O-PHOSPHATES HAVING THERAPEUTICAL ACTION

Theophile Godfraind, Brussels, Belgium; Paolo Ghirardi, Milan, Italy; Giorgio Ferrari, Milan, Italy, and Cesare Casagrande, Milan, Italy, assignors to Simes S.p.A., Milan, Italy

Filed Oct. 17, 1980, Ser. No. 198,263

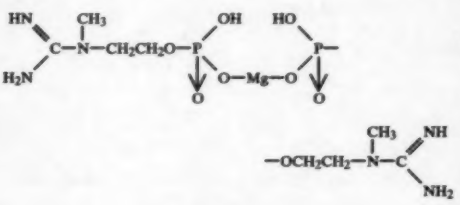
Claims priority, application Italy, Oct. 26, 1979, 26854 A/79

Int. Cl.³ A61K *31/66*; C07F *9/08*

U.S. Cl. 424—211 **7 Claims**

1. A method for the treatment and the prevention of myocardiac infarction, characterized in that magnesium salt of creatinol-O-phosphate is administered, either orally or parenterally or by intravenous perfusion.

3. Magnesium salt of creatinol-O-phosphate having the formula:



4,376,118
STABLE NONAQUEOUS SOLUTION OF TETRACYCLINE SALT

Lawrence J. Daher; George C. Hoss, both of Elkhart, Ind., and Victor A. Raul, Edwardsburg, Mich., assignors to Miles Laboratories, Inc., Elkhart, Ind.

Continuation-in-part of Ser. No. 194,556, Oct. 6, 1980. This application May 19, 1981, Ser. No. 262,475

Int. Cl.³ A01N *37/18*

U.S. Cl. 424—227 **3 Claims**

1. A stable nonaqueous solution of tetracycline hydrochloride consisting essentially of a mixture of 0.25 to 2 percent tetracycline hydrochloride, 41 to 88 percent of a nonaqueous diluent material selected from the class consisting of glyceryl triacetate, diisopropyl sebacate, diisopropyl adipate, isopropyl palmitate, isopropyl myristate, lauryl lactate, linear alcohol lactate, decyl oleate, isodecyl oleate, 2-ethylhexyl palmitate, isopropyl linoleate, acetylated monoglyceride, acetyl tributyl citrate, acetyl triethyl citrate, tricyclo hexyl citrate, butyl myristate, promyristyl propionate, dibutyl sebacate, dioctyl adipate, dioctyl succinate, isobutyl acetate, acetamide, methyl acetamide, polydimethyl cyclosiloxane, hexamethyl disiloxane, and fractionated triglycerides of coconut oil origin, 4 to 40 percent of a nonaqueous solvent selected from the class consisting of ethanol, methanol, isopropanol, butanol, N-methyl-2-pyrrolidone and acetone, 0.3 to 20 percent nonaqueous nonionic solubilizer selected from the class consisting of polyethylene glycols, methoxy polyethylene glycols, polysorbates, ethylene oxide-propylene oxide block copolymers, sorbitan esters and glycerin, 0 to 6 percent nonaqueous anionic solubilizer selected from the class consisting of monovalent or divalent salts of dialkyl sulfosuccinates, acyl lactates and aryl sulfonates, and 0 to 0.75 percent antioxidant selected from the class consisting of ascorbyl palmitate, ascorbic acid, propyl gallate, butylated hydroxytoluene, butylated hydroxyanisole, tertiary butyl hydroquinone, and d-beta, gamma and delta isomers of tocopherol, said percent values being on a weight/weight basis based on the entire solution weight.

4,376,119
BENZOTHIAZINE DERIVATIVE

Shoichiro Ozaki; Hideya Kobayashi, both of Kamakura; Haruki Mori, Yokohama; Hiroshi Kawazura, Mobara; Yutaka Okazaki, Mobara; Takafumi Kitano, Mobara; Mikio Kumakura, Mobara, and Takuo Nakano, Yokohama, all of Japan, assignors to Mitsui Toatsu Chemicals, Inc., Tokyo, Japan

Filed Jun. 16, 1981, Ser. No. 274,209

Claims priority, application Japan, Feb. 24, 1981, 56/25002

Int. Cl.³ A61K *31/54*; C07D *417/12*

U.S. Cl. 424—246 **2 Claims**

1. N-(6-fluoro-2-pyridyl)-3,4-dihydro-2-methyl-4-oxo-2H-1,2-benzothiazine-3-carboxamide 1,1-dioxide.

2. An anti-inflammatory composition comprising N-(6-fluoro-2-pyridyl)-3,4-dihydro-2-methyl-4-oxo-2H-1,2-benzothiazine-3-carboxamide 1,1-dioxide and a pharmaceutical carrier.

4,376,120
THERAPEUTIC COMPOSITIONS WITH A CYTOSTATIC ACTION CONTAINING ISOCYANURIC ACID DERIVATIVES AND PROCESS OF MANUFACTURE

Ulrich Zeidler; Herbert Fischer, both of Duesseldorf; Brigitte Hase, Erkrath; Hinrich Möller, Monheim, and Hans-Christoph Wilk, Neuss, all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft Auf Aktien, Duesseldorf-Holthausen, Fed. Rep. of Germany

Filed Aug. 3, 1981, Ser. No. 289,392

Claims priority, application Austria, Aug. 14, 1980, A 4169/80

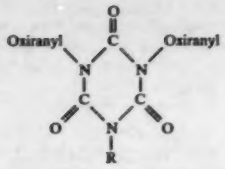
Int. Cl.³ C07D *251/34*; A61K *31/53*

U.S. Cl. 424—249 **15 Claims**

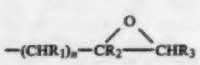
1. N-substituted dioxiranyl isocyanurates selected from the group consisting of:

di-2,3-epoxybutyl-but-2-enyl isocyanurate,
tri-2,3-epoxybutyl isocyanurate,
tri-3,4-epoxybutyl isocyanurate,
tri-4,5-epoxypentyl isocyanurate,
tri-5,6-epoxyhexyl isocyanurate,
di-2,3-epoxybutyl-methyl isocyanurate,
di-2,3-epoxybutyl-butyl isocyanurate,
di-3,4-epoxybutyl-but-3-enyl isocyanurate,
di-4,5-epoxypentyl-pent-4-enyl isocyanurate,
di-5,6-epoxyhexyl-hex-5-enyl isocyanurate,
di-4,5-epoxypentyl-pentyl isocyanurate,
di-5,6-epoxyhexyl-hexyl isocyanurate,
di-3,4-epoxybutyl-butyl isocyanurate,
tri-(1-methyl-2,3-epoxy)propyl isocyanurate,
di-(1-methyl-2,3-epoxy)-propyl-(1-methyl-prop-2-enyl) isocyanurate,
tri-2,3-epoxypentyl isocyanurate,
tri-3,4-epoxypentyl isocyanurate,
tri-2,3-epoxyhexyl isocyanurate,
tri-3,4-epoxyhexyl isocyanurate,
tri-4,5-epoxyhexyl isocyanurate,
tri-(2-methyl-2,3-epoxy)-butyl isocyanurate,
tri-(4-methyl-4,5-epoxy)-pentyl isocyanurate,
tri-(4-methyl-4,5-epoxy)-hexyl isocyanurate,
tri-(3-phenyl-2,3-epoxy)-propyl isocyanurate,
tri-(3-methoxy-carbonyl-2,3-epoxy)-propyl isocyanurate,
tri-1,2-epoxy-cyclohexylmethyl isocyanurate, and
tri-7,8-epoxyoctyl isocyanurate.

2. A cytostatic composition consisting essentially of a cytostatically effective amount of at least one N-substituted-dioxiranyl isocyanurate having the formula



wherein each oxiranyl is the same or different, has not more than 12 carbon atoms and has the formula



wherein R_1, R_2 and R_3 are the same or different and members selected from the group consisting of hydrogen, alkyl, haloalkyl, hydroxyalkyl and alkoxyalkyl and n is an integer from 1 to 8, with the proviso that if n is 1 in all oxiranyl groups, at least one of R_1 or R_3 is other than hydrogen, and R has not more than 12 carbon atoms and is a member selected from the group consisting of oxiranyl, as defined above, hydrogen, alkyl, alkenyl, hydrocarbon aryl, hydrocarbon aralkyl, hydrocarbon alkaryl, cycloalkyl and cycloalkenyl, which R may have further substituents selected from the group consisting of hydroxy, halogen, amino, mercapto, alkylmercapto, hydrocarbon arylmercapto, alkylsulfoxy, hydrocarbon arylsulfoxy, alkoxy, hydrocarbon aryloxy, and alkanoyloxy, and a pharmaceutically acceptable carrier therefor.

4,376,121

ANTIALLERIGICALLY-ACTIVE IMIDAZOTHIENOPYRIMIDINE DERIVATIVES

Frank Kienzle, Flü, Switzerland, assignor to Hoffmann-La Roche Inc., Nutley, N.J.

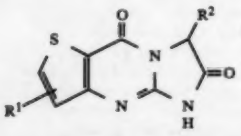
Filed Jun. 19, 1981, Ser. No. 275,271

Claims priority, application Switzerland, Jun. 27, 1980, 4995/80

Int. Cl.³ A61K *31/505*; C07D *595/14*

U.S. Cl. 424—251 **5 Claims**

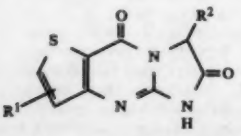
1. A compound of the formula



I

wherein R^1 is hydrogen, chlorine, bromine or C_{1-4}-alkyl and R^2 is hydrogen or methyl, or its tautomers, or, when R^2 is methyl, its racemates or enantiomers.

5. A method for treating or preventing allergic reactions, which comprises administering an antiallergically effective amount of a compound of the formula



I

wherein R^1 is hydrogen, chlorine, bromine or C_{1-4}-alkyl and R^2 is hydrogen or methyl, or a tautomer thereof, or, when R^2 is methyl, a racemate or enantiomer thereof.

4,376,122

NOVEL 3-SUBSTITUTED AMINO-1-HETEROARYL-2-PYRAZOLINES

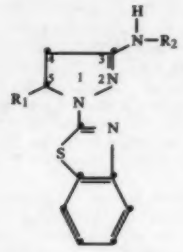
John P. Dusza, Nanuet, N.Y.; Joseph P. Joseph, Montvale, N.J., and Seymour Bernstein, New City, N.Y., assignors to American Cyanamid Company, Stamford, Conn.

Filed Jul. 13, 1981, Ser. No. 282,826

. Int. Cl.³ C07D *417/02*; A61K *31/428*

U.S. Cl. 424—270 **4 Claims**

1. A compound selected from the group consisting of those of the formula:



wherein R_1 is phenyl or p-tolyl; R_2 is CO—R_3 where R_3 is lower alkyl (C_1–C_4) and the pharmacologically acceptable acid-addition salts thereof.

4,376,123

HEXAHYDROAZEPINYLOXY-CHROMONES USEFUL AS ANTIDEPRESSANTS

Hans-Heinrich Hausberg, Weiterstadt; Helmut Prücher, Heppenheim; Jürgen Uhl, Seeheim; Christoph Seyfried, Seeheim-Jugenheim, and Klaus Minck, Ober-Ramstadt, all of Fed. Rep. of Germany, assignors to Merck Patent Gesellschaft mit Beschrankter Haftung, Darmstadt, Fed. Rep. of Germany

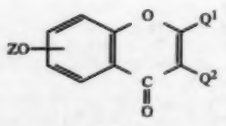
Filed Dec. 15, 1980, Ser. No. 216,454

Claims priority, application Fed. Rep. of Germany, Dec. 13, 1979, 2950135

Int. Cl.³ A61K *31/35*; C07D *311/24, 311/30, 311/36*

U.S. Cl. 424—283 **4 Claims**

1. A compound of the formula



wherein Z is 1-R^2-3-R^4-4-hexahydroazepinyl;

R^2 is H, alkyl of 1–4 C atoms, alkenyl of 2–4 C atoms, cycloalkylalkyl of 4–8 C atoms or benzyl;

R^4 is H or alkyl of 1–4 C atoms;

Q^1 and Q^2 are independently each H, alkyl of 1–4 C atoms, cycloalkyl or alkylcycloalkyl each of 3–6 total C atoms or Ar;

Ar is phenyl or phenyl substituted by F, Cl, alkoxy or alkylthio, each of 1–4 C atoms, methylenedioxy or CF_3;

or a physiologically acceptable acid addition salt thereof.

4. A method of treating depression in a patient in need of such treatment comprising administering to the patient an antidepressantly effective amount of a compound of claim **1**.

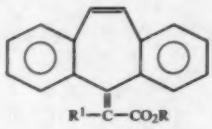
4,376,124

METHOD FOR MODULATING THE IMMUNE RESPONSE WITH DIBENZOCYCLOHEPTENYLIDENES

Richard P. Carlson, Lansdale; Richard L. Fenichel, Plymouth Meeting; Alan J. Lewis, Audubon, and Milton Wolf, West Chester, all of Pa., assignors to American Home Products Corporation, New York, N.Y.

Filed Mar. 8, 1982, Ser. No. 356,005
Int. Cl.³ A61K *31/19, 31/235*
U.S. Cl. 424—308 4 Claims

1. A method of modulating the immune response in mammals in need of modulation of the immune response which comprises administering thereto an amount effective to bring about said modulation of the immune response of a compound having the formula:



where R is hydrogen or an alkyl group of 1–4 carbon atoms, R^1 is hydrogen or an alkyl group of 1–4 carbon atoms, and pharmaceutically acceptable salts thereof.

4,376,125

AMINOBENZYLPROPRANOLOL AND PHARMACEUTICAL PREPARATION THEREOF

Gary Brooker, Charlottesville, Va.; Wesley L. Terasaki, Miami, Fla., and Joel M. Linden, Charlottesville, Va., assignors to University of Virginia Alumni Patents Foundation, Charlottesville, Va.

Filed Nov. 5, 1980, Ser. No. 204,199
Int. Cl.³ C07C *87/28;* A61K *31/135*
U.S. Cl. 424—330 3 Claims

1. 1-(p-Amino -α,α-dimethylphenethylamino)-3-(1-naphthoxy)-2-propanol and the pharmaceutically acceptable acid addition salts thereof.

2. A method of inducing β-adrenergic receptor blocking activity in a host subject, comprising: administering to said host subject a physiologically effective amount of the compound of claim 1.

3. A therapeutic composition possessing β-adrenergic receptor blocking activity, comprising:

a physiologically effective amount of the compound of claim 1 with a pharmaceutically acceptable carrier.

4,376,126

METHOD OF MAKING A YOGHURT BEVERAGE AND PRODUCT THEREBY

Paulus H. J. M. Evers, Veghel, Netherlands, assignor to DMV-Campina B.V., Veghel, Netherlands

Continuation of Ser. No. 177,577, Aug. 13, 1980, abandoned. This application Mar. 1, 1982, Ser. No. 353,570
Claims priority, application Netherlands, Nov. 13, 1979, 7908307
Int. Cl.³ A23C *23/00;* A23L *2/02*
U.S. Cl. 426—43 8 Claims

1. A method of producing a predominantly yoghurt beverage, which is storage stable for more than six months and contains about 89 percent of a yoghurt milk product, from a yoghurt milk product, and, optionally, fruit juice, fruit essence, or fruit concentrate, and which is substantially in the absence of pectin and sugar, wherein said yoghurt milk product is prepared by fermenting milk until the mass has reached a pH value conventional for yoghurt, comprising:

(a) mixing about 89 percent of said yoghurt milk product with relatively minor amounts of ingredients selected from the group consisting of water, sugars, pectin, flavors, and colors, and, optionally, fruit juice, fruit essence, or fruit concentrate;

(b) homogenizing said mixture;

(c) subjecting said homogenized mixture to a heat treatment wherein the temperature of said mixture is raised to between 45° and 55° C. while said mixture is being agitated and while maintaining a temperature difference, between said mixture and the heating medium used to raise the temperature of said mixture, of no more than 10° C.;

(d) subsequently cooling said homogenized heat-treated mixture to a temperature of between 25° and 35° C. while maintaining a temperature difference, between said mixture and the medium used to cool, of no more than about 10° C.;

(e) performing a second homogenization of said cooled mixture at the temperature reached in step d; and then

(f) packaging said mixture by a method selected from the group consisting of: pasteurizing, cooling, and aseptically packing said mixture in the appropriate package; and packing said mixture in the appropriate package followed by pasteurizing said mixture while in said package and then cooling said mixture in said package.

4,376,127

PROCESS FOR DEFLATULATING AND IMPROVING THE DIGESTIBILITY OF LEGUMES

Kenneth E. Lunde, 1101 Noel Dr., #4, Menlo Park, Calif. 94025

Filed Jan. 23, 1981, Ser. No. 227,599
Int. Cl.³ A23L *1/20;* C07G *17/00*
U.S. Cl. 426—46 16 Claims

1. A process for increasing the digestibility of an edible comprising a legume selected from the group consisting of legumes of genus Phaseolus, genus Soja, and genus Lens, and rendering innocuous flatulence causing factors therein which comprises admixing with said edible an effective digestibility increasing and flatulence innocuous-rendering enzyme system found in the not normally consumed components of pineapple plants or papaya plants and selected from the group consisting of bromelin-containing and papain-containing enzyme systems.

4,376,128

PROCESS FOR IMPROVING THE COMESTIBILITY OF LEGUMES AND FOR DEFLATULATING THEM BY USE OF NEUTRAL ENZYME SYSTEMS

Kenneth E. Lunde, 1101 Noel Dr., #4, Menlo Park, Calif. 94025

Filed Jan. 23, 1981, Ser. No. 227,602
Int. Cl.³ A23L *1/20;* C07G *17/00*
U.S. Cl. 426—46 19 Claims

1. A process for improving the comestibility, and yield of an edible comprising a legume selected from the group consisting of legumes of the genus Phaseolus, the genus Soja, and the genus Lens which comprises admixing with said legume before cooking an effective comestibility and yield improving amount of a neutralized bromelin-containing enzyme system or a neutralized papain-containing enzyme system.

4,376,129

SELF-DEGRADING COMPOSITION AND FODDER

Sandor Piukovich; Lajos Stankovics, and Tibor Kiralyhidi, all of Budapest, Hungary, assignors to Chinoin Gyogyszer es Vegyeszeti Termekek Gyara Rt., Budapest, Hungary

Filed Dec. 19, 1980, Ser. No. 218,204
Claims priority, application Hungary, Dec. 29, 1979, CI-2003
Int. Cl.³ A23K *1/00*
U.S. Cl. 426—64 8 Claims

1. A process for making a dry, self-degrading composition capable of activation in the presence of water and promoting the degradation of fodder substances, said process comprising:

(a) heating an amylaceous cereal or maize to thermally predegrade it to a degradation index of 0.12 to 0.27 thereby converting it into solid, available starch;

(b) grinding the solid, available starch formed in step (a) to a particle size of 50 to 1500μ; and

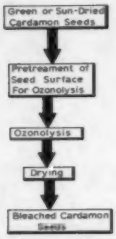
(c) admixing the ground, solid, available starch with finely divided powdered alpha-amylase to produce said dry self-degrading composition.

4,376,130

OZONOLYSIS OF WHOLE CARDAMON SEEDS

Alexander Astrack, Hillcrest La., Upper Brookville, N.Y. 11771, and Charles G. Schoenfeld, 1 Diana Trail, Staten Island, N.Y. 10304

Filed Apr. 29, 1981, Ser. No. 258,607
Int. Cl.³ A23L *1/277*
U.S. Cl. 426—253 **1 Claim**



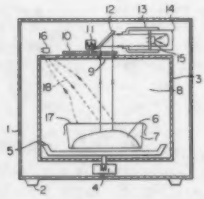
1. A method of bleaching green or sun-dried whole cardamon seeds, which comprises; washing the seeds to remove surface coatings of gums and waxes; wetting the whole seeds with water containing a surfactant; contacting the wet seeds with an oxidizing agent consisting of ozone; and drying the seeds after contact with the ozone.

4,376,131

METHOD FOR CONTROLLING THE HEATING OF FOOD STUFF

Keijiro Mori, Nara; Shigeru Kusunoki, Yamatokoriyama; Kazunari Nishii, Yamatokoriyama; Tomotaka Nobue, Yamatokoriyama, all of Japan, and Takato Kanazawa, deceased, late of Nara, Japan by Kyoko Kanazawa, administratrix, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Sep. 2, 1980, Ser. No. 183,582
Claims priority, application Japan, Sep. 7, 1979, 54-115512
Int. Cl.³ G01N *33/02*
U.S. Cl. 426—231 **6 Claims**



1. A method for controlling the heating of a food stuff in a food heating apparatus which includes a high frequency oscillator, a food temperature measuring instrument, at least one of a humidity detector and a gas detector, and a control circuit for operating said oscillator, said controlling method comprising the steps of:

setting, depending on a type of said food stuff to be heated, a heating period coefficient (K_o) specific to said food stuff and corresponding to a predetermined reference initial temperature of the foof stuff, said heating period coefficient being stored in said control circuit,

measuring, before heating, an initial temperature (T_i) of the food stuff by said food temperature measuring instrument;

starting the heating of the food stuff;

calculating a corrected heating period coefficient (K) as a function of at least said measured initial temperature (T_i) of the food stuff, said heating period coefficient (K_o), and said predetermined reference initial temperature;

heating the food stuff for a first time period (τ) until a value detected by one of said humidity detector and said gas detector reaches a predetermined level from a minimum value;

counting said first time period (τ) from the start of heating until said value detected by one of said humidity detector and said gas detector reaches the predetermined level; and,

further heating the food stuff for an additional second time period ($K\tau$), following said first time period, which is obtained by multiplying said first time period (τ) by said corrected heating period coefficient (K), whereby the heating time length for the food stuff is determined properly by eliminating errors due to differing initial temperatures of the food stuff.

4,376,132

SEASONING COMPOSITION HAVING CRAB MEAT FLAVOR

Hajime Eguchi, Yokohama; Hideko Furukawa, Tokyo, and Tetsuya Kawakita, Yokohama, all of Japan, assignors to Ajinomoto Co., Ltd., Tokyo, Japan

Filed Oct. 6, 1981, Ser. No. 309,100
Int. Cl.³ A23L *1/221, 1/228, 1/229, 1/231*
U.S. Cl. 426—537 **17 Claims**

1. A crab meat flavored seasoning composition, comprising:

(a) not less than 50% by wt. of amino acids,

(b) not less than 2% by wt. of 5'-nucleotides,

(c) not less than 30% by wt. of inorganic salts,

(d) not less than 1% by wt. of glucides and

(e) a substantial amount of crab shell extract or synthetic crab aromatics; said amino acids comprising not less than 40% by wt. of glycine, not less than 40% by wt. of arginine and glutamic acid and not less than 10% by wt. of alanine, said 5'-nucleotides comprising not less than 50% by wt. of GMP and said inorganic salts comprising not less than 20% by wt. of potassium ion, not less than 40% by wt. of phosphate ion and not more than 40% by wt. of sodium and chlorine ions.

4,376,133

AGGLOMERATION OF PROTEINACEOUS SOLIDS

J. Redmond Farnand, Ottawa, Canada, assignor to Canadian Patents & Development Limited, Ottawa, Canada

Filed Mar. 24, 1981, Ser. No. 246,935
Int. Cl.³ A23J *3/00*
U.S. Cl. 426—656 **18 Claims**

1. A process for agglomerating and separating finely divided proteinaceous solids from a non-polar organic liquid suspension thereof, comprising:

(i) contacting the suspension with a solids-agglomerating amount of an immiscible polar liquid comprising lower alkanol-water mixtures, the amount of water being chosen within the range of about 7 to about 24 wt.% based on the alkanol;

(ii) agitating the 3-phase system to effect the desired agglomeration of the solids;

(iii) separating the agglomerates from the organic liquid suspending medium; and

(iv) recovering the proteinaceous solids.

4,376,134
LOW-CHOLESTEROL SAUSAGE ANALOG AND PROCESS THEREFOR

Surinder Kumar, Buffalo Grove, Ill., assignor to The Quaker Oats Company, Chicago, Ill.

Continuation-in-part of Ser. No. 36,348, May 7, 1979, abandoned. This application Jul. 28, 1981, Ser. No. 288,091 The portion of the term of this patent subsequent to Dec. 11, 1996, has been disclaimed.

Int. Cl.³ A23J *3/00*

U.S. Cl. 426—656 **1 Claim**

1. A process for the production of a low cholesterol sausage analog resembling the natural product in appearance, cooking characteristics, flavor, eating qualities, and texture, said process consisting essentially of:

a. providing an aqueous mixture of ingredients selected from the group consisting of from 60–80 percent by weight water, from 15 to 30 percent by weight flavors, from 0 to 6.0 percent by weight spices, from 0–3.0 percent by weight coloring agents and combinations thereof;

b. providing a dry mixture of ingredients selected from the group consisting of 0–7 percent egg white solids, 0–5 percent non-fat dry milk, 0–8 percent by weight sodium caseinate, 0–5 percent by weight sugar and combinations thereof;

c. admixing textured protein with the aqueous mixture thereby forming a first admixture;

d. forming a second admixture by admixing with said first admixture, 5–30 percent by weight of a blend of fats and oils wherein said blend contains equal amounts of (i) a high melting point fat selected from the group of fats having melting points in the range 90°–110° F., (ii) an intermediate melting point fat selected from the group of fats having melting points in the range 70°–90° F., and (iii) a low melting point fat or oil which is a liquid at room temperature; wherein said blend is at a temperature greater than or equal to the melting point of said blend during the admixing step;

e. admixing the dry mixture with the second admixture thereby forming a third admixture; and

f. adjusting the third admixture to a temperature of 60° F. or lower.

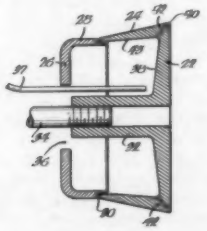
4,376,135
APPARATUS FOR ATOMIZATION IN ELECTROSTATIC COATING AND METHOD

Mulji Patel, Des Plaines, Ill., and Samuel W. Culbertson, Arvada, Colo., assignors to Binks Manufacturing Company, Franklin Park, Ill.

Continuation-in-part of Ser. No. 245,899, Mar. 20, 1981, abandoned. This application Nov. 16, 1981, Ser. No. 321,456

Int. Cl.³ B05B *15/04*

U.S. Cl. 427—31 **12 Claims**



12. A method of atomizing liquid coating material using a rotary atomizing device for electrostatically coating an article with a film of material, wherein an electrostatic field is established between a peripheral edge of the rotating device and the article to be coated and the liquid material flows across a smooth material feed surface of the device and toward the edge as a continuous thin film, characterized by increasing the rotational velocity of the material as it approaches the peripheral edge by flowing the material into and through a single row of a series of discrete, individual and circumferentially spaced passages which extend through the device in directions toward the edge, constrain the material to the same rate of rotation thereas and terminate in proximity with the edge, atomizing the material as it is projected out of and beyond the passages, and enhancing an electrostatic charge imparted to the material by providing on the outer periphery of the device a relatively sharp and circumferentially extending edge in close proximity with outlets from the passages.

4,376,136
METHOD FOR ELECTROSTATICALLY DEPOSITING POWDER IN SEVERAL DIFFERENT LAYERS ON OBJECTS

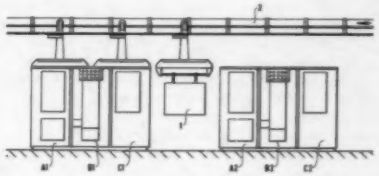
Alain Gernez, Orleans, France, assignor to Societe Anonyme dite: Compagnie Europeenne Pour L'Equipement Menager "Cepem", Paris, France

Filed May 28, 1981, Ser. No. 267,889

Claims priority, application France, Jun. 13, 1980, 80 13161

Int. Cl.³ B05D *1/04*

U.S. Cl. 427—33 **4 Claims**



1. A method of depositing successive layers of powder on objects, the method including providing at least first and second powder depositing booths, conveying objects along a path sequentially through said at least first and second powder depositing booths, electrostatically depositing an underlayer of a first powder in the first booth, and electrostatically depositing a cover layer of a second powder in the second booth, wherein the improvement comprises:

providing said first powder depositing booth with a first chamber, a second chamber located contiguously upstream of the first chamber with respect to the direction of movement of the objects along said path, and a third chamber located contiguously downstream of the first chamber with respect to the direction of movement of the objects along said path;

providing the second powder depositing booth with an electrostatic powder depositing chamber and an additional chamber located contiguously upstream of the electrostatic powder depositing chamber with respect to movement of the objects along said path; and wherein

the step of electrostatically depositing the first powder comprises dispersing the first powder in said first chamber of the first booth, diffusing a portion of the powder dispersed in the first chamber into said second and third chambers, and electrostatically charging in the second and third chambers at least part of the portions of the first powder diffused from the first chamber, such that part of the charged portions of the first powder is deposited on the objects in an even thin underlayer as the objects pass through the second and third chambers; and

the step of electrostatically depositing the second powder comprises dispersing and electrostatically charging the second powder in said electrostatic powder depositing chamber of the second booth, diffusing a portion of the second powder into said additional chamber from said electrostatic powder depositing chamber, and electrostati-

cally recharging in said additional chamber of the second booth at least part of the portion of the second powder diffused from said electrostatic powder depositing chamber of the second booth, such that a thin layer of the second powder is applied onto each object exclusively by electrostatic attraction as the object passes through said additional chamber before entering said electrostatic powder depositing chamber of the second booth.

4,376,137

METHOD OF FABRICATING A BI-LEVEL MAGNETIC BUBBLE PROPAGATION CIRCUIT

Isoris S. Gergis, Yorba Linda, and Wai-Tak P. Lee, Santa Ana, both of Calif., assignors to Rockwell International Corporation, El Segundo, Calif.

Division of Ser. No. 71,449, Aug. 31, 1979. This application Mar. 9, 1981, Ser. No. 242,079
Int. Cl.³ B05D 5/12
U.S. Cl. 427—131 4 Claims

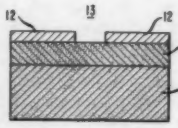
1. A method of fabricating a magnetic bubble domain propagation structure comprising the steps of:
providing on a body a magnetic garnet layer in which magnetic bubble domains can be propagated;
depositing a first layer of dielectric material on said magnetic garnet layer;
depositing a layer of photoresist on said first layer of dielectric material;
selectively removing portions of said layer of photoresist to form a first pattern of photoresist on said dielectric layer;
depositing a second layer of dielectric material on the pattern of photoresist and the exposed first layer of dielectric material;
selectively removing portions of said second layer of dielectric material and said layer of photoresist so that the edge of the pattern of said first layer is aligned with edge of second layer; and
depositing a single layer of permalloy over said first and second layers of dielectric material.

4,376,138

OPTICAL WAVEGUIDES IN INGAASP AND INP

Rodney C. Alferness, and Ivan P. Kaminow, both of Holmdel, N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jan. 4, 1982, Ser. No. 336,598
Int. Cl.³ G02B 5/172
U.S. Cl. 427—160 16 Claims



1. Method for manufacturing an optical device comprising an optical waveguide in a semiconductor material, the method comprising
(a) depositing a patterned processing layer on a surface of said semiconductor, thereby defining the waveguiding region,
(b) maintaining the semiconductor material carrying the processing layer at a temperature of at least 400° C. for at least about one hour, and
(c) contacting during at least part of the time of step (b) at least a part of the semiconductor carrying the processing layer with metal atoms, where the metal is selected from the group consisting of Si, Ge, Sn, Te, Se, As, P, Sb, Cd, Zn, In, Ga, Al, Fe, Cr, Cu, Ag, and Au whereby said metal atoms diffuse into said material thereby defining an optical waveguide.

4,376,139

PROCESS FOR TREATING METALLIC STARTING MATERIALS FOR SMELTING PLANTS, PARTICULARLY IRON SPONGE PARTICLES

Horst Sulzbacher, Leoben; Günther Saiger, Trofaiach, and Kurt Stift, Leoben, all of Austria, assignors to Voest-Alpine Aktiengesellschaft, Vienna, Austria

Filed May 27, 1981, Ser. No. 267,620
Claims priority, application Austria, Jun. 11, 1980, 3080/80
Int. Cl.³ B05D 7/00
U.S. Cl. 427—214 12 Claims

1. Process for treating metallic starting materials for smelting plants, particularly iron sponge particles, for the purpose of protecting the particles against reoxidation and/or against corrosion as well as for the purpose of improving the melting characteristics of said particles, said process comprising applying on the iron sponge particles a coating of CaO as well as iron or iron oxides as an adhesion promoter and then spraying water onto said coating, characterized in that a second coating consisting of dust-shaped CaO and a carbon source, particularly coal dust such as brown coal dust, bituminous coal dust or anthracite dust, hydrocarbons or the like and, if desired, of iron oxides as well as, if desired, of alloying elements is applied in a further process step onto the coating essentially consisting of hydrated CaO and in that the second coating is humidified with a smaller amount of water than would be required for completely hydrating the CaO contained within the second coating.

4,376,140

METHOD FOR PRODUCING A FLUORINATED COPOLYMER MEMBRANE

Kyoji Kimoto, Yokohama, and Mikio Ebisawa, Hiratsuka, both of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

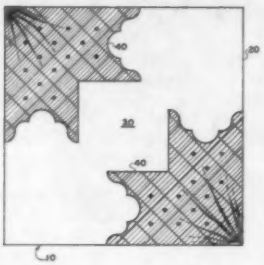
Filed Sep. 5, 1980, Ser. No. 184,270
Claims priority, application Japan, Sep. 6, 1979, 54/113524
Int. Cl.³ B32B 27/06
U.S. Cl. 427—244 5 Claims

1. A method of producing a fluorinated copolymer membrane comprising a first layer substantially parallel to the surface of said membrane and said first layer being made from a fluorinated copolymer containing pendant sulfonylchloride groups, and a second layer substantially parallel to the surface of said membrane and said second layer being made from a fluorinated copolymer containing pendant sulfonylfluoride groups, which comprises bringing a starting fluorinated copolymer membrane into contact with phosphorous pentachloride or a mixture of phosphorous trichloride and chlorine at a temperature of 80°-140° C., said starting membrane comprising (1) a first layer substantially parallel to the membrane, said first layer being made from a fluorinated copolymer containing pendant sulfonic acid groups or salts thereof, and (2) a second layer substantially parallel to the membrane, said second layer being made from a fluorinated polymer containing pendant sulfonylfluoride groups.

4,376,141
PROCESS FOR COLORING MAPLE WOOD AND MAPLE VENEER

David P. Maddox, Martinsville, Va., assignor to Stanley Interiors Corporation, Stanleytown, Va.

Filed Dec. 19, 1980, Ser. No. 218,360
Int. Cl.³ B05D 3/12
U.S. Cl. 427—370 2 Claims



1. A process for coloring the surface of hardrock maple and print grade maple veneer to resemble cherry, said process comprising the steps of:

(a) coating the surface of said wood with a sugar and water composition comprising:

(i) water (H_2O);

(ii) sugar ($C_{12}H_{22}O_{11}$)—40% by solution weight of H_2O;

(iii) strontium nitrate ($Sr(NO_3)_2$)—0.4% by solution weight of H_2O;

(iv) potassium chromate (K_2CrO_4)—0.06% by solution weight of H_2O; and

(b) subjecting the coated wood to simultaneous application of heat and pressure for a predetermined period of time.

4,376,142
METHOD FOR FINISHING FIBERBOARD UTILIZING A FROTHED PRIME COAT

James A. Allen, Macon, Ga., assignor to Armstrong World Industries, Inc., Lancaster, Pa.

Filed Aug. 25, 1980, Ser. No. 180,653
Int. Cl.³ B05D 3/02
U.S. Cl. 427—393 3 Claims

1. A method for preparing a prime-coated fiberboard product, said method comprising the steps of

preparing a frothed aqueous latex prime coating comprising a foaming agent, said frothed coating having a consistency of 500 to 750 grams per liter,

applying said coating at a rate of 220 to 320 grams per square meter of fiberboard, and

exposing the coated fiberboard to heat, thereby collapsing the froth and drying the coating.

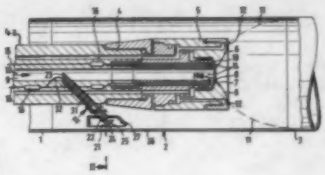
4,376,143
METHOD FOR THE SPRAY-COATING OF THE INSIDE OF TUBULAR BODIES HAVING A SEAM

Ernst Lehmann, St. Gallen, Switzerland, assignor to Gema AG Apparatebau, Switzerland

Division of Ser. No. 137,395, Apr. 4, 1980, Pat. No. 4,343,436.
This application Mar. 8, 1982, Ser. No. 355,336
Claims priority, application Fed. Rep. of Germany, Apr. 12, 1979, 2914960
Int. Cl.³ B05D 1/02, 1/04, 1/06, 1/34
U.S. Cl. 427—236 5 Claims

1. A method for the spray coating of the interior of hollow bodies, comprising the steps of:

spray coating a first region of the interior of a hollow body with a coating material by means of a relatively concentrated spray jet that is directed against the first region; and simultaneously coating a second region of the interior of the



hollow body by spraying a cloud of atomized coating material for coating the interior of the hollow body, whereby the first region is coated more heavily than the second region of the interior of the hollow body.

4,376,144
TREATED FIBERS AND BONDED COMPOSITES OF CELLULOSE FIBERS IN VINYL CHLORIDE POLYMER CHARACTERIZED BY AN ISOCYANATE BONDING AGENT

Lloyd A. Goettler, Akron, Ohio, assignor to Monsanto Company, St. Louis, Mo.

Filed Apr. 8, 1981, Ser. No. 252,111
Int. Cl.³ B29D 3/02, 23/04; B32B 1/08; F16L 11/10
U.S. Cl. 428—36 23 Claims

1. A composite of discontinuous cellulose fibers dispersed in a matrix comprising plasticized vinyl chloride polymer wherein the fibers are bonded to the matrix with a cyclic trimer of toluene diisocyanate.

21. A hose made from the composite of claim 1.

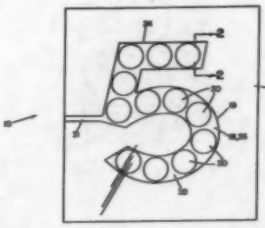
22. An injection molding made from the composite of claim 1.

23. Floor tile made from the composite of claim 1.

4,376,145
ELECTROLUMINESCENT DISPLAY

Norman J. Frame, Whitefish Bay, Wis., assignor to W. H. Brady Co., Milwaukee, Wis.

Continuation of Ser. No. 218,511, Dec. 22, 1980, abandoned.
This application Jan. 18, 1982, Ser. No. 340,092
Int. Cl.³ G09F 13/22
U.S. Cl. 428—195 3 Claims



1. An electroluminescent display device comprising

a layer of electroluminescent host material such as zinc sulfide,

selected portions of said host material being activated with an electroluminescent activator such as manganese,

said selected portions being transversely separated from one another by unactivated portions of said host material, and

said selected portions defining a desired display pattern, and

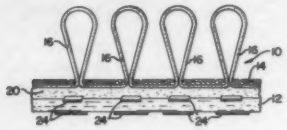
an electrode extending transversely over a plurality of said selected portions in order that said plurality may be illuminated by activation of said electrode.

4,376,146

WEFT INSERTION KNITTED SECONDARY CARPET BACKING

Tibor Juhasz, Summerville, and Hans E. Heyn, Summerton, both of S.C., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Feb. 11, 1981, Ser. No. 233,577
Int. Cl.³ B32B *3/02, 33/00*
U.S. Cl. 428—95 **15 Claims**



1. A carpet structure comprising:
a primary carpet backing having a first surface having pile fibers extending therefrom and secured to said primary carpet backing, and a second surface; and
a secondary carpet backing adhesively secured to said second surface of said primary carpet backing, said secondary carpet backing comprising a weft inserted knit material having a series of warp yarns forming spaced or interconnected rows of warp-wise extending knitted stitches and a series of weft yarns forming a series of spaced rows extending transversely of said series of warp yarns, said weft yarns being laid in said knitted stitches and interconnecting adjacent rows of said warp yarns.

4,376,147

PLASTIC FILM HAVING A MATTE FINISH

Robert E. Byrne; Leopoldo V. Cancio; Arthur J. Raffel, and Pai-Chuan Wu, all of Cincinnati, Ohio, assignors to Clopay Corporation, Cincinnati, Ohio

Filed Aug. 31, 1981, Ser. No. 298,346
Int. Cl.³ B32B *1/00, 3/30*
U.S. Cl. 428—167 **8 Claims**

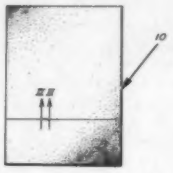
1. An embossed thermoplastic polyolefin film having an embossed matte pattern which is undetectable to the unaided eye and imparts a dull surface to the film, said film having a thickness within the range of about 0.5 to about 1.5 mils and an embossed depth of about 0.5 to about 2.5 mils wherein the embossed pattern comprises a series of embossed lines parallel to free lengthwise edges of the film and a series of embossed transverse lines intersecting said parallel lines to provide an overall general network of said lines surrounding raised bosses on one side of the film, wherein said bosses and said lines overlie on the opposite side of said film corresponding depressions and ridges, said embossed lines numbering within the range of about 150 to 300 lines per inch, said film having excellent winding characteristics and edge curl resistance.

4,376,148

IMPREGNATED NON-WOVEN SHEET MATERIAL WITH IONICALLY SOLUBILIZED RESIN

John McCartney, Chester County, Pa., assignor to Norwood Industries, Inc., Malvern, Pa.

Filed Sep. 18, 1980, Ser. No. 188,329
Int. Cl.³ B05D *5/00, 3/02, 1/18*
U.S. Cl. 428—198 **32 Claims**



1. A resin impregnated fibrous web comprised of:
a needled fibrous batt;
a polymeric resin distributed throughout said batt forming a resin impregnated fibrous web;
the density of said impregnated fibrous web being uniform throughout;
the bulk density of said web being less than the actual density of said web, whereby the web is porous; and
said impregnated web having filaments which are both coated and uncoated with polymeric resin and concentrations of polymeric resin.

4,376,149

SILICONE POLYMER COMPOSITIONS

Eugene R. Martin, Onsted, Mich., assignor to SWS Silicones Corporation, Adrian, Mich.

Continuation-in-part of Ser. No. 170,298, Jul. 18, 1980, abandoned. This application Jul. 10, 1981, Ser. No. 282,324
Int. Cl.³ B32B *7/00*
U.S. Cl. 428—266 **24 Claims**

1. A composition for treating textile materials comprising a silanol terminated organopolysiloxane and a silylated polyether of the general formula

$$\begin{array}{l} CH_2(OC_nH_{2n})_xR_fA_b \\ | \\ [\,CH(OC_nH_{2n})_xR_fA_c\,]_a \\ | \\ CH_2(OC_nH_{2n})_xR_fA_d \end{array}$$

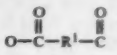
in which at least one R is selected from the group consisting of an —NH radical, an ammonium radical and a radical selected from the group consisting of

$$-OC-R^1-\overset{O}{\overset{\|}{C}}-O^{\ominus},$$

$$-OC-R^1-\overset{O}{\overset{\|}{C}}-O- \text{ and}$$

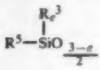
$$-OC-R^1-\overset{O}{\overset{\|}{C}}-$$

wherein the radicals are linked to the polyether through a group selected from the class consisting of an ester, amine, amide and ammonium radicals and the remaining R's are selected from the group consisting of hydroxyl, hydrocarbonoxy radicals having up to 18 carbon atoms and a radical of the formula

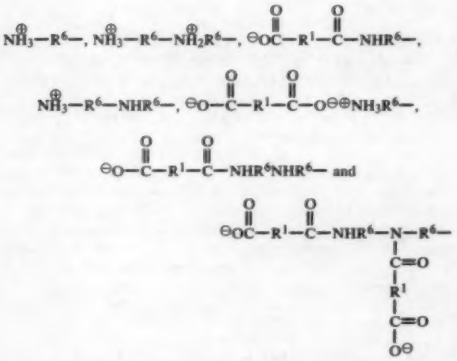


R^1 is a divalent hydrocarbon radical selected from the group consisting of $(-CH_2)_p$, —CH=CH— and a cyclic radical selected from the group consisting of C_6H_4, C_6H_8, C_6H_{10} and $C_{10}H_6$; A is a silicon containing radical selected from the group consisting of cationic and anionic radicals of the formula

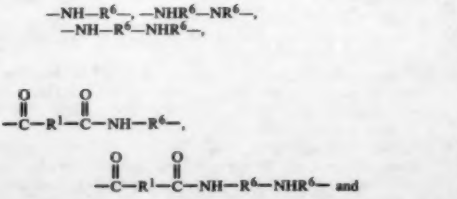
and nonionic radicals of the formula



in which R^2 and R^3 are monovalent hydrocarbon radicals having from 1 to 18 carbon atoms, R^4 is an ionic radical linked to a silicon atom consisting of carbon, hydrogen, oxygen and nitrogen atoms which is selected from the group consisting of



R^5 is a nonionic divalent radical selected from the group consisting of R^6 and a radical consisting of carbon, hydrogen, oxygen and nitrogen atoms which is selected from the group consisting of



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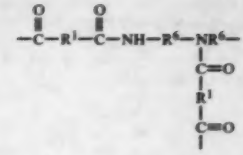
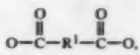
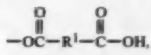


with the proviso that when R is the radical



then R^5 is R^6, wherein R^6 is a radical selected from the group consisting of a saturated divalent hydrocarbon radical having up to 10 carbon atoms, a divalent hydrocarbonoxy radical having up to 50 carbon atoms in which the oxygen is in the form of an ether linkage and an unsaturated divalent hydrocarbon radical having up to 10 carbon atoms in which the unsatisfied valences of the R^6 radical are linked to a silicon atom and the unsatisfied valences of A are satisfied by R and when A is a divalent radical, the ratio of A to R is 1:2 and when R is cationic, then A must be anionic and when R is anionic, then A must be cationic and when R is nonionic, then A must be nonionic, a is a number of from 0 to 4, b, c and d are each numbers of from 0 to 1 and the sum of b, c and d must be at least 1 and when b, c or d are 0, then R is selected from the group consisting of a hydroxyl, a hydrocarbonoxy radical and a radical of the formula



e is a number of from 0 to 2, f is 0 or 1 and when f is 0, then R^5 is a divalent hydrocarbonoxy radical linked to the silicon atom through a carbon-carbon bond, n is 2, 3 or 4, x is a number of at least 1 and up to 600 and y is a number of from 0 to 10.

4,376,150

HEAT-SENSITIVE RECORD MATERIAL

Munetaka Morita, Hyogo; Takuji Tuji, Osaka, and Katsuhiko Ishida, Hyogo, all of Japan, assignors to Kanzaki Paper Manufacturing Co., Ltd., Tokyo, Japan

Filed May 19, 1981, Ser. No. 265,238

Claims priority, application Japan, May 23, 1980, 55-69159

Int. Cl.³ B41M 5/18

U.S. Cl. 428—320.4 **4 Claims**

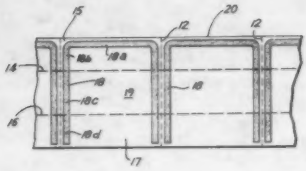
1. In a heat-sensitive record material comprising a base sheet having a color developing layer which includes finely divided particles comprising colorless chromogenic material and finely divided particles comprising acceptor which is reactive with said colorless chromogenic material to develop a color, the improvement that said colorless chromogenic material exists in said color developing layer in an amorphous state, said colorless chromogenic material in an amorphous state being one obtained by heating a colorless chromogenic material or colorless chromogenic composition which comprises at least one colorless chromogenic material, in a crystalline state to form a melt and then cooling said melt.

4,376,151

PRESSURE THRESHOLD ADHESIVE

Michael A. Parrotta, North Tonawanda, N.Y., assignor to Moore Business Forms, Inc., Grand Island, N.Y.

Filed Jun. 29, 1981, Ser. No. 278,870
Int. Cl.³ B32B 5/16; C08U 7/02; C09J 7/02
U.S. Cl. 428—323 9 Claims



8. An adhesive product which exhibits substantially no adhesive tack except upon the application of a threshold pressure which comprises:

(a) a substrate;

(b) an intermediate layer of normally tacky, pressure sensitive adhesive on the substrate; and

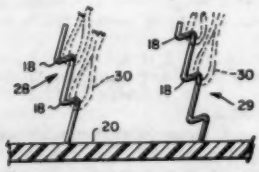
(c) a top layer of hollow microspheres having an average particle size of about 20 to about 80 microns superimposed over and attached to the intermediate adhesive layer in an amount sufficient to sufficiently cover the adhesive layer and to provide an adhesive product exhibiting substantially no adhesive tack while the microsphere layer remains intact and exhibiting tack upon exposing the intermediate adhesive layer by displacement of the top microsphere layer by the application of a threshold pressure of at least 50 pounds per square inch, the microspheres having a density less than the normally tacky adhesive and being insoluble in the normally tacky adhesive, the microspheres comprising about 15 percent to about 25 percent by weight of the total weight of the adhesive and microsphere layers, and the adhesive and microsphere layers having a total thickness of about 0.076 to about 0.102 mm.

4,376,152

CRIMPED THERMOPLASTIC FILAMENT

Robert A. Bennett, 170 Sturbridge Rd., Easton, Conn. 06425

Division of Ser. No. 552,291, Feb. 24, 1975, Pat. No. 4,003,110, which is a division of Ser. No. 424,221, Dec. 13, 1973, abandoned, which is a division of Ser. No. 213,464, Dec. 29, 1971, Pat. No. 3,778,870. This application Jan. 10, 1977, Ser. No. 757,966
Int. Cl.³ D02G 3/22
U.S. Cl. 428—369 4 Claims



2. A relatively stiff shape-retaining elongated filament of substantially uniform cross section bent into a plurality of identical zig-zag multiple hook-like filament portions facing in both directions along said elongated filament, said filament portions intersecting at acute angles and comprising elongated gently sloped tread-like lengths of filament forming a small acute angle with the neutral axis of the thus formed elongated filament and connected with each other by shorter reverse return riser-like lengths of filament inclined to the neutral axis at greater acute angles of the same sign.

3. An elongated thermoplastic filament bent along its axis into a series of repeating identical zigzags, each comprising in a direction along the filament a long running length of filament progressing generally along the direction of the elongated filament and a shorter return length of filament retrogressing generally along the direction of the elongated filament, each running length of filament meeting both adjacent return lengths of filament at acute angles.

4,376,153

COMPOSITIONS COMPRISING VISCO-ELASTIC LIQUID COMPOUNDS

Charles F. Cardy, Luton, England, assignor to Interox Chemicals Limited, London, England

Filed May 18, 1981, Ser. No. 264,841
Claims priority, application United Kingdom, Jun. 7, 1980, 8018746
Int. Cl.³ B32B 17/10; C08F 8/14
U.S. Cl. 428—430 17 Claims

1. A composition comprising a polyfunctional viscoelastic liquid compound having a molecular weight of at least 25,000 and comprising a polyvinyl alcohol polymer in which at least half of the vinyl units of the vinyl polymer have adducted thereon a plurality of functional groups having the general formula $—CO—(CR_2)_z—O—_nH$ wherein R, in each occurrence in the formula, represents either a hydrogen atom or an organic radical, the total number of carbon atoms in all the occurrences of R not exceeding 12, z represents a whole number having a value of from 4 to 8 and n represents a whole number having an average value of at least 0.5 per vinyl unit of the polyvinyl alcohol polymer.

10. A composition as claimed in claim 1 which is an adhesive.

11. A composition as claimed in claim 10 which is adherent to glass, or to an organic polymeric material.

4,376,154

COPPER FOIL FOR A PRINTED CIRCUIT AND A METHOD FOR THE PRODUCTION THEREOF

Hiroshi Nakatsugawa, Yokohama, Japan, assignor to Furukawa Circuit Foil Co., Ltd., Tokyo, Japan

Filed Oct. 22, 1980, Ser. No. 199,497
Claims priority, application Japan, Apr. 27, 1979, 54-52154
Int. Cl.³ C25D 3/30, 3/22
U.S. Cl. 428—607 17 Claims

1. Copper foil for a printed circuit having a bonding surface which will subsequently be bonded to a resin substrate, which comprises a copper layer, a layer consisting essentially of tin coated on said bonding surface of said copper layer and a layer consisting essentially of vanadium-containing zinc coated on said tin layer.

4,376,155

THERMAL GALVANIC CELLS

Robert L. Peck, Windham Center, Conn., assignor to Kali, Inc., Lebanon, Conn.

Continuation of Ser. No. 129,417, Mar. 12, 1980, abandoned. This application Oct. 26, 1981, Ser. No. 314,518
Int. Cl.³ H01M 6/36
U.S. Cl. 429—11 23 Claims

1. A thermal galvanic cell comprising:

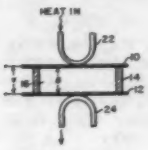
a first electrode, said first electrode being at least in part comprised of a conductive metal;

at least a second electrode, said second electrode being at least in part comprised of a conductive metal, said second electrode being oriented generally parallelly with respect to said first electrode;

a liquid electrolyte, said electrolyte being in contact with spacially separated facing surface areas of said electrodes whereby current may flow between said electrodes, said

electrolyte including a barrier material which reduces thermal convection currents over the facing surfaces of the electrodes; and

means for establishing a pair of transversely oriented temperature gradients in the cell, said temperature gradient



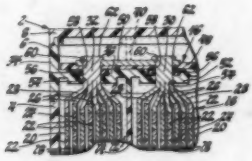
establishing means directly co-acting with portions of said electrodes at the same time, the first of said temperature gradients being between the electrolyte contacting surface areas of said first and second electrodes and the second of said temperature gradients being over at least a part of the electrolyte contacting surface area of said electrodes.

4,376,156

BATTERY INTERCELL CONNECTOR MANIFOLD

Ellis G. Wheadon, Anderson, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed May 11, 1981, Ser. No. 262,132
Int. Cl.³ H01M 2/22
U.S. Cl. 429—160 **2 Claims**



1. A multi-cell Pb-acid storage battery comprising:

an open-ended case including a plurality of external walls defining a central cavity;

a plurality of partitions dividing said cavity into several compartments each adapted to receive a galvanic cell element immersed in electrolyte, said cell element comprising a stack of alternately interleafed positive and negative polarity plates, said plates each having a lug projecting therefrom for electrically coupling the plate to other plates in the same cell element and to an adjacent cell element via an intercell connector;

a cover sealed along its borders to said external walls and including a closure wall substantially completely overlying said open-end such as to substantially confine said electrolyte to said compartments;

an undivided recess in said cover, said recess traversing said several compartments and defined in part by said closure wall;

a terminal post on each element for concentrating the current flowing to and from a plurality of like-polarity plates in said element, said post projecting from a bundle of lugs from like-polarity plates through said closure wall and into said recess;

a plurality of apertures in said closure wall and through which said posts project into said recess from said elements;

seal means engaging said post and said closure wall at each said aperture for preventing passage of said electrolyte from said compartment into said recess through said aperture;

a discrete intercell connector manifold in said recess adjacent said closure wall and traversing said several compartments, said manifold comprising a non-conductive carrier plate including as an integral part thereof a plurality of small, highly conductive links of lightweight, electrolyte-destructible metal and serving to permit en masse handling of said links and electrical coupling of the terminal posts of several different cell elements together into a plurality of sets according to a desired interconnection pattern;

at least two openings in each said link, each said opening mating with and secured to a said post; and

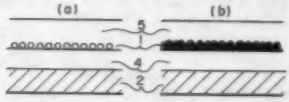
means for protectively covering said manifold.

4,376,157

PHOTOGRAPHIC MATERIALS WITH TWO-DIMENSIONALLY DISTRIBUTED PRECIPITATION NUCLEI

Yasuo Tsubai; Yoshikazu Takaya, and Takao Senga, all of Nagaokakyo, Japan, assignors te Mitsubishi Paper Mills, Ltd., Tokyo, Japan

Filed Mar. 19, 1981, Ser. No. 245,548
Claims priority, application Japan, Mar. 26, 1980, 55/38542
Int. Cl.³ G03C 5/54, 1/48; B32B 5/16, 9/00
U.S. Cl. 430—229 **13 Claims**



2. A photographic material for use in silver complex diffusion transfer process which comprises a support having thereon a non-light sensitive water permeable colloid layer containing physical development nucleus particles and a silver halide emulsion layer between the support and the nuclei, wherein all of the physical development nucleus particles are covered with a non-light sensitive water permeable colloid having a thickness of at least 10 times the average diameter of the nucleus particles and all of the physical development nucleus particles are substantially two-dimensionally distributed at such intervals as capable of forming a continuous transfer developed silver.

4,376,158

COLOR-PROOFING METHOD

Daniel S. Spechler, Brooklyn, N.Y., assignor to Keuffel & Esser Company, Morristown, N.J.

Division of Ser. No. 795,339, May 9, 1977. This application Oct. 21, 1981, Ser. No. 313,424
Int. Cl.³ G03C 1/68
U.S. Cl. 430—291 **8 Claims**

1. The method of forming an image which comprises:

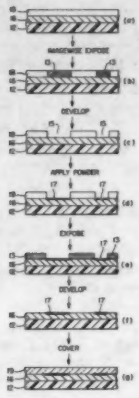
providing imaging sheet material comprising a carrier sheet having a composite coating thereon comprising a layer of a pressure-sensitive adhesive and a layer of a photoresist composition coated upon said adhesive layer;

image-wise exposing said photoresist layer to actinic radiation, thereby effecting an image-wise change in developer fluid solubility of said photoresist layer;

contacting said exposed photoresist layer with said developer fluid and removing from said layer the more soluble areas thereof, thereby forming open-window areas in said photoresist layer through which are accessible like areas of the underlying adhesive layer defining the exposure image;

applying to at least said accessible adhesive layer areas of said sheet material a finely-divided powder, whereby powder adhering to said accessible areas renders said image perceptively distinct; and

removing from the resulting imaged sheet material the residual portions of said photoresist layer, thereby rendering



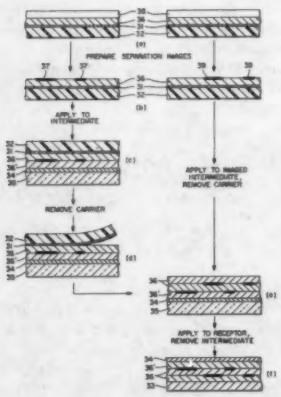
accessible the remaining non-imaged adhesive surface areas of said adhesive layer.

4,376,159

METHOD OF PREPARING MATTE FINISH COLOR-PROOFING SURPRINTS

Daniel S. Spechler, Brooklyn, N.Y., assignor to Keuffel & Esser Company, Morristown, N.J.

Division of Ser. No. 795,339, May 9, 1977. This application Jan. 18, 1982, Ser. No. 340,565
Int. Cl.³ G03C *1/68, 5/00*
U.S. Cl. 430—293 **5 Claims**



1. The method of providing a matte finish on color-proofing surprints which comprises:

(a) providing a receptor sheet comprising a carrier sheet presenting a matte surface and, coated on said carrier sheet, a layer of substantially transparent film-forming polymeric material in intimate contact with said matte surface;

(b) providing a color-proofing surprint image comprising a carrier sheet and a colored image layer adhered to said surprint carrier sheet;

(c) adhering said film-forming polymeric layer to said image layer in a union exhibiting greater adhesion than the adhesion between said polymeric layer and said matte surface; and

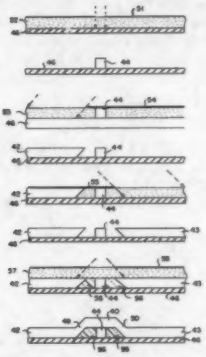
(d) separating said receptor carrier sheet from said polymeric layer by peeling apart at said matte surface interface, thereby depositing a complementary matte-surfaced polymeric film adhered to said surprint image layer.

4,376,160

METHOD OF MAKING AND STRUCTURE FOR MONOLITHIC OPTICAL CIRCUITS

Vincent L. Evanchuk, Sherman Oaks, Calif., assignor to California Institute of Technology, Pasadena, Calif.

Continuation-in-part of Ser. No. 138,165, Apr. 7, 1980, abandoned. This application Jan. 27, 1981, Ser. No. 228,750
Int. Cl.³ B05D *3/06*
U.S. Cl. 430—321 **4 Claims**



1. A method for making a multilevel monolithic optical circuit on a supporting surface, said optical circuit consisting of conductors on at least two levels with optical coupling of conductors on one level to optical conductors on the second level through optical conductive columns, comprising the steps of

preparing the supporting surface to be reflective to light in said circuit at the interface between light conductors of said circuit and said surface,

spreading a layer of liquid radiation sensitive plastic on said surface to a thickness desired for said conductors of said circuit,

exposing said radiation sensitive plastic to radiation in a pattern desired for said conductors, thereby to harden said liquid radiation sensitive plastic to form said circuit conductors on a first level,

washing away unexposed liquid radiation sensitive plastic,

coating said pattern of optical conductors thus formed on said support surface with liquid radiation sensitive cladding material that will assure light in said conductors on said first level to be reflected by the interface between said conductors and said coating material,

exposing said radiation sensitive cladding material except over specified areas of conductors of said first level where optical coupling is to be made with conductors of said second level, thereby to harden said radiation sensitive cladding material except over said specified areas,

washing away said unexposed radiation sensitive cladding material over said specified areas,

spreading a second layer of liquid radiation sensitive plastic on said radiation sensitive cladding material and allowing said liquid radiation sensitive plastic thus spread to fill areas where radiation sensitive cladding material has been washed away, said second layer of liquid radiation sensitive plastic having an index of refraction substantially the

same as said first layer of liquid radiation sensitive plastic used to form said first level of conductors,

exposing said second layer of radiation sensitive plastic to radiation in a desired pattern for said conductors, thereby to harden said second layer of liquid radiation sensitive plastic to form a second level of conductors with optical coupling to said first level of conductors, and

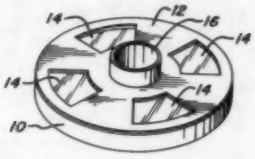
coating said second level of conductors of said optical circuit thus formed with material that will assure light in said conductors to be reflected by the interface between said second level of conductors and said coating material.

4,376,161

ENCODER DISC AND METHOD OF MANUFACTURE

Luke R. Volpe, Melrose, Mass., assignor to Dynamics Research Corporation, Wilmington, Mass.

Filed Jul. 27, 1981, Ser. No. 286,987
Int. Cl.³ C25D *1/08*
U.S. Cl. 430—321 **9 Claims**



1. A method of making an encoder disc comprising the steps of:

positioning a transparent master disc having an opaque pattern thereon and a central spindle over an electrically conductive master platten having a photoresist layer thereon and an aperture through the photoresist layer and the platten, such that the spindle protrudes into the aperture;

exposing the photoresist through the master disc;

removing the master disc;

developing the photoresist;

locating a non-conductive straight-sided plug in the aperture;

electroforming a layer over the platten; and,

stripping the electroformed layer from the platten.

4,376,162

HEAT-DEVELOPABLE PHOTOSENSITIVE MATERIAL WITH ANTIHALATION LAYER

Ken Kawata; Isamu Itoh; Misao Awata, and Takao Masuda, all of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Oct. 19, 1981, Ser. No. 313,705
Claims priority, application Japan, Oct. 17, 1980, 55-145344
Int. Cl.³ G03C *1/74*
U.S. Cl. 430—510 **23 Claims**

1. A heat-developable photosensitive material comprising:

a heat-developable photosensitive layer comprised of an organic silver salt, a photocatalyst, and a reducing agent; and

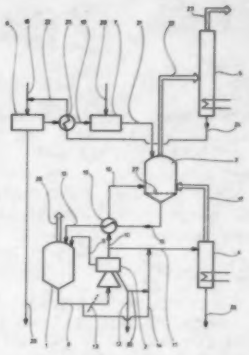
an antihalation layer provided on the opposite side of said heat-developable photosensitive layer with respect to the side intended for imagewise exposure, wherein said antihalation layer is comprised of a photosensitive halogen-containing compound capable of reducing the pH of said antihalation layer by photolysis, said antihalation layer being colored with a dye which changes color when the pH of said antihalation layer is reduced.

4,376,163

PROCESS FOR PRODUCING ETHANOL BY CONTINUOUS FERMENTATION OF POLYSACCHARIDE-CONTAINING RAW MATERIALS

Lars K. J. Ehnström, Tullinge, Sweden, assignor to Alfa-Laval AB, Tumba, Sweden

Filed Sep. 23, 1980, Ser. No. 189,571
Claims priority, application Sweden, Oct. 1, 1979, 7908105-5
Int. Cl.³ C12P *7/06, 7/10, 7/14*; C07C *31/08*
U.S. Cl. 435—162 **15 Claims**



1. A process for making ethanol which comprises adding a fermentable feed substance to a fermentor, fermenting said feed substance, continuously withdrawing fermentation liquor from said fermentor, continuously dividing said withdrawn fermentation liquor into a yeast-concentrate stream and a yeast-free stream, continuously recirculating said yeast-concentrate steam to the fermentor, continously passing the yeast-free stream to the separator, feeding to said separator polysaccharides and at least one hydrolytic enzyme, separating the yeast-free stream into a first ethanol enriched vapor phase and a first liquid bottoms stream, feeding said first ethanol enriched vapor phase to an ethanol recovery plant, conducting the separation of the ethanol enriched vapor phase from the yeast-free stream in the separator under a temperature higher than the fermentation temperature and under conditions suitable for enzymatic hydrolysis, whereby, during the separation of said yeast-free stream, the polysaccharides are hydrolysed by the action of at least one hydrolytic enzyme to fermentable saccharides, and recirculating part of said first bottoms stream containing said fermentable saccharides to the fermentor.

4,376,164

PROCESS FOR PREPARING BROAD HOST RANGE SMALL PLASMID RINGS AS CLONING VEHICLES

Ronald H. Olsen, Ann Arbor, Mich., assignor to Microlife Technics, Inc., Sarasota, Fla.

Division of Ser. No. 147,563, May 8, 1980. This application Oct. 19, 1981, Ser. No. 312,409
Int. Cl.³ C12N *15/00*; C12P *19/34*; C12N *1/20, 1/00*; C12P *21/100*
U.S. Cl. 435—172 **3 Claims**

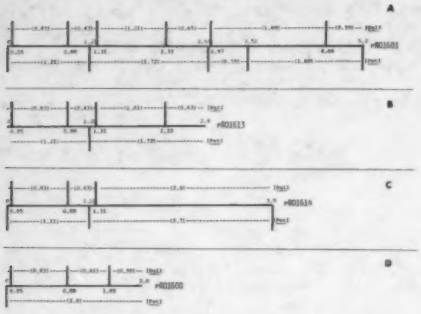
1. The process which comprises:

(a) providing a plasmid aggregate of a first plasmid associated with a second plasmid, wherein the second plasmid has a transposon which produces a useful chemical characteristic and wherein the first plasmid is pRO1600 carried with RPI. in *Pseudomonas aeruginosa* NRRL-B-12124 or a derivative thereof;

(b) providing the plasmid aggregate in a plasmid receptive bacterial cell;

(c) growing the receptive bacterial cell in a growth medium with the plasmid aggregate to randomly produce a recom-

bined plasmid including the transposon and first plasmid, wherein the recombined plasmid replicates upon division of the bacterial cell; and



(d) selecting the bacterial cells with the recombined plasmid with the transposon.

4,376,165

METHOD OF PREPARING AN ENZYME-LABELED LIGAND FOR USE IN SPECIFIC BINDING ASSAYS AND THE LABELED CONJUGATE PRODUCED THEREBY

William E. Hornby, Berkshire, and David L. Morris, Buckinghamshire, both of England, assignors to Miles Laboratories, Inc., Elkhart, Ind.

Continuation of Ser. No. 917,961, Jun. 22, 1978, abandoned. This application Mar. 16, 1981, Ser. No. 244,047

Int. Cl.³ C12N *9/96*; G01N *33/54*; C12N *9/04, 9/02*

U.S. Cl. 435—188 **21 Claims**

1. An enzyme-labeled compound having the formula:

Apo-Pr-R-L

wherein Pr represents an organic prosthetic group, Apo is an apoenzyme combined with said prosthetic group forming its conjugated enzyme, R is a linking group, and L is a hapten of molecular weight between 100 and 1000; wherein said hapten and said prosthetic group are coupled through said linking group at a site on the hapten away from its specific binding site and at a site on the prosthetic group away from its active binding site for the apoenzyme.

10. A method of preparing an enzyme-labeled antigen or hapten for use in specific binding assays for determining said antigen or hapten or a specific binding partner thereof, comprising the steps of:

covalently coupling said antigen or hapten, at a site thereon away from its specific binding locus, to an organic prosthetic group, at a site thereon away from its active binding locus for an apoenzyme, and

combining the resulting coupled product with said apoenzyme to form a conjugated enzyme with said prosthetic group in said coupled product yielding an enzyme-labeled antigen or hapten.

4,376,166

NOCARDIA STRAIN

Thomas Schupp, Möhlin; Peter Traxler, Allschwil, and Jakob Nüesch, Arlesheim, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 112,898, Jan. 17, 1980, Pat. No. 4,298,692. This application Jun. 3, 1981, Ser. No. 270,184

Int. Cl.³ C12N *1/20*

U.S. Cl. 435—253 **1 Claim**

1. A biologically pure culture of the microorganism Nocardia mediterranei strain DMS 1415.

4,376,167

HYDROLYSIS OF RAFFINOSE BY ALPHA-GALACTOXIDASE

Vincenza Vitobello; Paolo Branduzzi, and Nadia Cimini, all of Rome, Italy, assignors to E.N.I. Ente Nazionale Idrocarburi, Rome, Italy

Filed Dec. 5, 1980, Ser. No. 213,657

Claims priority, application Italy, Feb. 1, 1980, 19618 A/80

Int. Cl.³ C13J *1/00*; C12N *9/40*; C12R *1/865*

U.S. Cl. 435—276 **3 Claims**

1. The process of hydrolysing raffinose contained in a sucrose containing product comprising reacting said sucrose containing product with a microorganism selecting from the group consisting of *Saccharomyces cerevisiae, var. oleaceous* and *Saccharomyces cerevisiae var. oleaginosus.*

4,376,168

PHOSPHATE OF CALCIUM CERAMICS

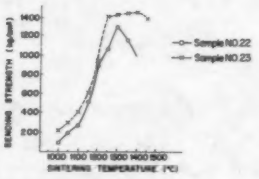
Akio Takami, Konan, and Kazuo Kondo, Nagoya, both of Japan, assignors to NGK Spark Plugs Co., Ltd., Nagoya, Japan

Continuation of Ser. No. 84,553, Oct. 15, 1979, abandoned. This application Apr. 21, 1981, Ser. No. 256,007

Claims priority, application Japan, Oct. 19, 1978, 53-127851; Dec. 13, 1978, 53-153035; Apr. 16, 1979, 54-46500

Int. Cl.³ C04B *35/00, 35/02*

U.S. Cl. 501—1 **24 Claims**



1. Phosphate of calcium ceramics obtained by sintering a composition essentially consisting of 0.5–15% by weight of P_2O_5-metal oxide frit and the balance of a powdery material substantially consisting of phosphate of calcium having a Ca/P atomic ratio of 1.4–1.75, said P_2O_5-metal oxide frit essentially consisting, in mol% calculated for the frit, of 40–75% of P_2O_5 and 20–55% of one or more metal oxide selected from the group consisting of BaO, CaO, MgO, ZnO, Na_2O and K_2O, provided that the sum of P_2O_5 and said metal oxide is not less than 90 mol%, said ceramics having a bending strength of at least about 1000 kg/cm^2.

4,376,169

LOW-MELTING, LEAD-FREE CERAMIC FRITS

Richard A. Eppler, Timonium, Md., assignor to Mobay Chemical Corporation, Pittsburgh, Pa.

Filed Apr. 28, 1982, Ser. No. 372,592

Int. Cl.³ C03C *1/00, 3/08, 5/00*

U.S. Cl. 501—24 **5 Claims**

1. A lead-free, low-melting frit composition having an incipient fusion point below about 450° C. and a coefficient of thermal expansion less than 10×10^{-6} cm/cm/°C., consisting essentially of (in parts by weight based on a total of approximately 100 parts by weight):

(a) 7–12.5 parts alkali oxide selected from 2–9 parts Na_2O and 2–7 parts Li_2O;

(b) 23–34 parts B_2O_3;

(c) 2–4 parts Al_2O_3;

(d) 30–45 parts SiO_2;

(e) 0.75–4 parts F;

(f) 2–4 parts P_2O_5;

(g) 4–8 parts ZnO; and

(h) 2–5 parts TiO_2.

4,376,170
ZINC BOROSILICATE OPAL GLASSES

Richard M. Wiker, Painted Post, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Mar. 22, 1982, Ser. No. 360,349
Int. Cl.³ C03C 3/08, 3/30
U.S. Cl. 501—32 2 Claims

1. A spontaneous opal glass which exhibits a coefficient of thermal expansion (0°–300° C.) of less than 35×10^{-7}/°C., a strain point in excess of 560° C., good microwave compatibility, and dense opacity when formed into sheet consisting essentially, analyzed in terms of weight percent on the oxide basis, of

Na_2O	2.8 ± 0.2
ZnO	9.4 ± 0.6
B_2O_3	12.9 ± 0.5
TiO_2	0.8 ± 0.2
SiO_2	Remainder

4,376,171
PROCESS FOR THE PRODUCTION OF POLYESTER RESINS

David H. Blount, 5450 Lea St., San Diego, Calif. 92105

Division of Ser. No. 319,144, Nov. 9, 1981, Pat. No. 4,339,366, which is a continuation-in-part of Ser. No. 207,391, Nov. 17, 1980, Pat. No. 4,336,340, which is a continuation-in-part of Ser. No. 134,975, Mar. 30, 1980, Pat. No. 4,283,311, which is a continuation-in-part of Ser. No. 13,139, Feb. 21, 1979, Pat. No. 4,226,982. This application May 13, 1982, Ser. No. 377,853
Int. Cl.³ C08J 9/00
U.S. Cl. 521—100 28 Claims

1. The process for the production of foamed polyurethane product by the following steps:

(a) heating and reacting 10 to 50 parts by weight of a broken-down alkali metal and/or a broken-down alkali metal cellulose polymer produced by mixing 3 parts by weight of a cellulose-containing plant or plant derivative with 2 to 5 parts by weight of melted alkali metal hydroxide, then heating the mixture at from 150° C. to 220° C. while agitating for 5 to 60 minutes, with 10 to 50 parts by weight of a substituted organic hydroxy compound which contains at least one substituent which will split off in the reaction, then

(b) adding, heating and reacting 10 to 50 parts by weight of polycarboxylic acid and/or polycarboxylic acid anhydride, thereby producing a polyester resinous product,

(c) adding and reacting 50 parts by weight of an organic polyisocyanate with 1 to 95 parts by weight of said polyester resinous product in the presence of up to 50% by weight of a chemically-inert blowing agent and up to 10% by weight of a polyurethane activator, percentage based on weight of reactants, thereby

(d) producing a foamed polyurethane product.

4,376,172
CLOSED LOOP CONTROL OF COMPRESSIBLE FLUID ADDITION TO A MIXTURE OF SUCH FLUID AND A LIQUID

Gilbert R. Belangee, Fairfield; Robert J. Dransman, West Chester, and Kirby L. Stone, Cincinnati, all of Ohio, assignors to Cincinnati Milacron Inc., Cincinnati, Ohio

Filed Feb. 1, 1982, Ser. No. 344,379
Int. Cl.³ C08J 9/30
U.S. Cl. 521—133 22 Claims

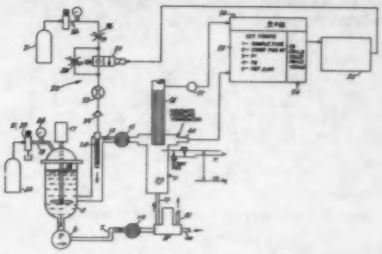
1. A closed loop apparatus to control the flow of a gas into a liquid in automatic response to a determination or measurement of the gas in a sample of a mixture of said gas and said liquid comprising

a recirculation system for said mixture having connected in series a source for said mixture, a place of use of said mixture, and a metering pump which has a plunger reciprocatable in a chamber;

first, second and third conduit means connected, respectively, between said source and said place, said place and said pump, and said pump and said source;

means for adding gas to liquid connected into at least one of said recirculation system and conduit means;

means to trap a sample of said mixture within said metering pump responsive to a trap signal to do so and to untrap such a sample responsive to another signal;



means to determine the actual distance moved by said plunger in said chamber to change the pressure of said sample from a first preselected pressure to a second preselected pressure and to produce an actual distance signal representative of said actual distance;

means to combine said actual distance signal with a set point signal to produce a control signal;

means to control the gas flow to said means for adding gas in response to said control signal; and

means to transmit the respective signals from where produced to where utilized.

4,376,173
PROCESS FOR THE PRODUCTION OF POLYEPOXY SILICATE RESINS

David H. Blount, 5450 Lea St., San Diego, Calif. 92105

Division of Ser. No. 306,184, Sep. 28, 1981, which is a continuation-in-part of Ser. No. 257,126, Apr. 24, 1981, which is a continuation-in-part of Ser. No. 203,730, Nov. 3, 1980, which is a continuation-in-part of Ser. No. 112,290, Jan. 15, 1980, which is a continuation-in-part of Ser. No. 29,202, Apr. 12, 1979. This application Apr. 1, 1982, Ser. No. 364,613
The portion of the term of this patent subsequent to Feb. 2, 1999, has been disclaimed.
Int. Cl.³ C08J 9/00; C08G 77/02; C08L 63/00
U.S. Cl. 521—137 17 Claims

1. The process for the production of foamed polyurethane silicate resinous product by the following steps:

(a) mixing and reacting 10 to 200 parts by weight of a polyfunctional epoxide compound and 50 parts by weight of an alkali metal aldehyde broken down lignin-cellulose silicate polymer thereby

(b) producing an aldehyde broken down ligain-cellulose silicate polyepoxy resin; then

(c) mixing and reacting 100 parts by weight of a polyisocyanate, up to 10% by weight of a polyisocyanate catalyst, up to 50% by weight of a blowing agent, up to 20% by weight of a foam regulator and 50 to 200 parts by weight of the aldehyde broken down lignin-cellulose silicate polyepoxy resin, percentage based on reactants, thereby

(d) producing a polyurethane silicate foam.

4,376,174

CURABLE EPOXY RESIN COMPOSITIONS

Kunio Itoh, and Tooru Takamura, both of Annaka, Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

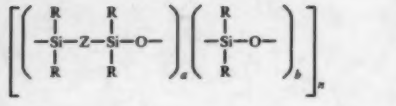
Filed Mar. 12, 1981, Ser. No. 243,252
Claims priority, application Japan, Mar. 17, 1980, 55-33601
Int. Cl.³ C08L 63/00
U.S. Cl. 523—456 5 Claims

1. A curable epoxy resin composition which comprises

(a) 100 parts by weight of an epoxy resin,

(b) from 1 to 200 parts by weight of a curing agent,

(c) an organosilicon polymer represented by the general formula



in which

R is independently a monovalent hydrocarbon group or a halogenated monovalent hydrocarbon group,

Z is an alkylene or arylene group,

n is a positive number of at least 10 on an average and

a and b are each a positive number not exceeding 1 with the proviso that a+b is a positive number from 1 to 2 inclusive and the ratio of a to b is in the range from 0.2 to 1.0 inclusive,

in an amount of from 1 to 50% by weight based on the total amount of the components (a) and (b),

(d) a filler, and

(e) a curing catalyst.

4,376,175

FLOOR CARE COMPOSITIONS

Robert J. Posten, Mahwah, N.J., assignor to Airwick Industries, Inc., Carlstadt, N.J.

Filed Jun. 4, 1980, Ser. No. 156,244
Int. Cl.³ C08L 33/00
U.S. Cl. 523—501 7 Claims

1. An aqueous composition for application to a substrate to clean said substrate and provide a substantially clear, glossy, protective finish thereon comprising an aqueous phase;

from about 20.0–50.0% of a non-volatile, solid, film-forming acrylic polymer;

from about 5.0–20.0% of a non-film forming resinous material selected from the group consisting of aldehyde/ketone resins, esters of polyacrylic acid and C_1–C_4 alkanols, polyacrylic resins, esters of monomeric resin acids, condensation products of monomeric resin acids, polyesters of organic non-resinous polycarboxylic acids and monomeric polyhydric alcohols, phenol-formaldehyde polycondensates, melamine-formaldehyde condensates, urea-formaldehyde resins and styrene resins; said film-forming and non-film forming materials being dispersed in said aqueous phase;

from about 0.5–2.0% of a plasticizer;

from about 0.01–1.0% of a fluorocarbon surface active agent; wherein the improvement comprises

from about 2.0–10.0% of an ether alcohol; and

from about 2.0–10.0% of isopropanol; the percentages being based on the total weight of the composition.

4,376,176

PROCESS FOR SETTING A LATEX OF A FILM FORMING MATERIAL

Douglas Wilson, Weybridge, England, assignor to The British Petroleum Company Limited, London, England

PCT No. PCT/GB80/00104, § 371 Date Feb. 5, 1981, § 102(e) Date Feb. 5, 1981, PCT Pub. No. WO80/02843, PCT Pub. Date Dec. 24, 1980
PCT Filed Jun. 16, 1980, Ser. No. 237,136
Claims priority, application United Kingdom, Jun. 21, 1979, 7921722
Int. Cl.³ C08L 95/00, 11/02
U.S. Cl. 524—7 14 Claims

1. A process for the delayed action setting of a composition comprising adding to anionic latex of polychloroprene a delayed action setting agent compound containing a multivalent metal cation, which metal cation compound has a solubility in the range 0.1 g to 150 g per 100 g of water at 20° C. in water and which has a dissolution time greater than 1 minute, the quantity of metal cation compound being not more than 2.5% by weight based on the total weight of composition and not more than 11% based on the weight of polychloroprene solids in the composition.

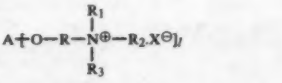
4,376,177

SIZING COMPOSITION

Kinjiro Matsunaga, Saitama; Kozo Ohira, Funabashi, and Yunosuke Nakagawa, Soka, all of Japan, assignors to Kao Soap Co., Ltd., Tokyo, Japan

Filed Nov. 28, 1980, Ser. No. 210,926
Claims priority, application Japan, Dec. 26, 1979, 54/170092
Int. Cl.³ C08L 1/08, 3/04, 99/00
U.S. Cl. 524—35 9 Claims

1. A sizing composition comprising an aqueous emulsion prepared by aqueous emulsion copolymerization of a monomer mixture consisting essentially of (A) first vinyl monomer component consisting essentially of (1) from 80 to 100 percent by weight of one or a mixture of two or more vinyl esters of lower fatty acids and (2) from zero to 20 percent by weight of one or more vinyl comonomers copolymerizable with said vinyl ester, with the proviso that said vinyl comonomer does not contain a carboxyl group, and (B) one or a mixture of two or more unsaturated carboxyl group-containing monomers copolymerizable with said first vinyl monomer component, the amount of said unsaturated carboxyl group-containing monomer being in the range of from 0.1 to 15 percent by weight, based on the weight of said first vinyl monomer component; said aqueous emulsion containing admixed therein one or a mixture of two or more cationic polymers having the formula



wherein A is a starch or cellulose residue; R is alkylene or hydroxyalkylene; R_1, R_2 and R_3, which are the same or different, are alkyl, aryl or aralkyl, or

form a heterocyclic ring; X is an anion; and l is a positive number such that the degree of substitution of the cationic group is at least 0.01, per one anhydroglucose unit of the starch or cellulose residue, said cationic polymer being added during the emulsion copolymerization or after the emulsion copolymerization is completed.

6. A fabric sizing composition consisting essentially of an aqueous emulsion of

I. copolymer of

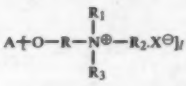
A. vinyl monomer consisting essentially of from 80 to 100 percent by weight of one or a mixture of two or more vinyl esters of fatty acids having from 1 to 4 carbon atoms and from zero to 20 percent by weight of one or more vinyl comonomers copolymerizable with said vinyl ester, said comonomer being other than an unsaturated carboxyl group-containing monomer, and

B. one or a mixture of two or more unsaturated carboxyl group-containing monomers selected from the group consisting of acrylic acid, methacrylic acid, crotonic acid, maleic acid, fumaric acid, itaconic acid, aconitic acid, sorbic acid, p-vinylbenzoic acid, alkyl half esters of unsaturated polycarboxylic acids, partial esters of unsaturated polycarboxylic acids and partial amides of unsaturated polycarboxylic acids,

said copolymr containing from 0.2 to 5.0 percent by weight of B, based on the weight of A,

said copolymer I being mixed with

II. one or a mixture of two or more cationic polymers selected from the group consisting of cationic polymers having the formula



wherein A is starch or cellulose residue, R is alkylene or hydroxyalkylene, R_1, R_2 and R_3, which can be the same or different, are alkyl, aryl or aralkyl, or can form a heterocyclic ring together with the nitrogen atom in the formula, X is an anion selected from the group consisting of chlorine, bromine, iodine, sulfuric acid, sulfonic acid, methylsulfuric acid, phosphoric acid or nitric acid, and l is a number of from 0.01 to 1, per one anhydroglucose unit of A,

wherein the viscosity of a 1 wt. percent aqueous solution of said cationic polymer is from 5 to 1,000 cps, measured at 20° C., said emulsion containing from 0.2 to 3.0 percent by weight of said cationic polymer II and from 25 to 50 percent by weight of A, and the balance is essentially water.

4,376,178

PROCESS FOR THE PRODUCTION OF POLYOL-ALKALI METAL SILICATE EMULSION

David H. Blount, 5450 Lea St., San Diego, Calif. 92105

Continuation-in-part of Ser. No. 287,589, Jul. 28, 1981, Pat. No. 4,331,578, which is a continuation-in-part of Ser. No. 191,375, Sep. 29, 1980, Pat. No. 4,262,129, which is a continuation-in-part of Ser. No. 146,474, May 5, 1980, Pat. No. 4,273,908. This application Jan. 11, 1982, Ser. No. 338,347

The portion of the term of this patent subsequent to Aug. 4, 1998, has been disclaimed.

Int. Cl.³ C08L 3/00

U.S. Cl. 524—47 17 Claims

1. The process for the production of a stable polyol-alkali metal silicate emulsion by mixing the following components:

(a) aqueous alkali metal silicate solution, 1 to 50 parts by weight;

(b) polyol, 25 parts by weight;

(c) alkali metal salt of a weak acid, 1% to 20% by weight, percentage based on weight of alkali metal silicate solution.

4,376,179

HOT MELT ADHESIVE COMPOSITIONS

Pawan K. Agarwal, Westfield, and Robert D. Landberg, Bridgewater, both of N.J., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Oct. 14, 1980, Ser. No. 196,212

Int. Cl.³ C08L 95/00

U.S. Cl. 524—65 14 Claims

1. A hot melt adhesive composition which comprises:

(a) a highly unsaturated hydrocarbon rubber;

(b) about 5 to about 100 parts by weight of a neutralized sulfonated EPDM terpolymer per 100 parts by weight of said highly unsaturated hydrocarbon rubber, said neutralized sulfonated EPDM terpolymer having about 5 to about 50 meq. of neutralized sulfonated groups per 100 grams of said neutralized sulfonated EPDM terpolymer; and

(c) about 25 to about 200 parts by weight of a hydrocarbon resin of a petroleum or coal tar distillate per 100 parts by weight of said highly unsaturated hydrocarbon rubber.

4,376,180

ETHYLENE POLYMERS STABILIZED AGAINST WATER-TREEING BY N-PHENYL SUBSTITUTED AMINO SILANES; AND THE USE OF THESE COMPOSITIONS AS INSULATION ABOUT ELECTRICAL CONDUCTORS

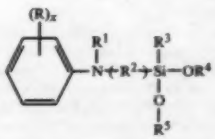
Robert J. Turbett, Millington, N.Y.; Arnold C. Ashcraft, Hightstown, N.J., and Herbert E. Petty, Bethel, Conn., assignors to Union Carbide Corporation, Danbury, Conn.

Filed Sep. 30, 1981, Ser. No. 307,244

Int. Cl.³ C08K 5/54; H01B 3/30

U.S. Cl. 524—188 14 Claims

1. A composition, devoid of fillers, comprising an ethylene polymer and an N-phenyl substituted amino silane having the formula:



wherein: R is a monovalent hydrocarbon radical; x is 0 to 1 inclusive; R^1 is hydrogen or a monovalent hydrocarbon radical; R^2 is a divalent hydrocarbon radical; R^3 is a monovalent hydrocarbon radical or an oxy substituted hydrocarbon radical; R^4 is a monovalent hydrocarbon radical having at least 8 carbon atoms and R^5 is a monovalent hydrocarbon radical; wherein said N-phenyl substituted amino silane is present in an amount sufficient to improve the water-treeing resistance of said composition.

4,376,181

STABILIZED ANTIFOULING PAINT COMPOSITION

Koreyoshi Suenobu, Buzen; Yasuhiro Hidaka, Sakai, and Tetsuji Ike, Fukuoka, all of Japan, assignors to Yoshitomi Pharmaceutical Industries Ltd., Osaka, Japan

PCT No. PCT/JP81/00021, § 371 Date Sep. 15, 1981, § 102(e) Date Sep. 15, 1981, PCT Pub. No. WO81/02162, PCT Pub. Date Aug. 6, 1981

PCT Filed Jan. 30, 1981, Ser. No. 302,419

Int. Cl.³ C09D 5/14

U.S. Cl. 524—343 12 Claims

1. An antifouling paint composition stabilized against viscosity increase and gelation during storage which comprises triorganotin-containing polymer and cuprous oxide as combined active ingredients, a stabilizing amount of a hindered phenol, and a solvent therefor.

4,376,182

TOUGHENED POLYAMIDE FLAME RETARDED WITH OCTABROMODIPHENYL ETHER

Paul N. Richardson, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Apr. 28, 1982, Ser. No. 372,560
Int. Cl.³ C08K 5/06
U.S. Cl. 524—371 3 Claims

1. A toughened, flame-retardant polyamide molding blend consisting essentially of:

(A) a film-forming polyamide selected from

(i) poly(hexamethylene adipamide) or,

(ii) a copolymer of hexamethylene adipamide and caprolactam.

(B) at least 13% by weight of (A), (B) and (C) of a toughening system containing at least 7% by weight of (A), (B) and (C) of an adduct of (a) an ethylenically unsaturated compound containing carboxyl groups or carboxyl derivatives, and (b) a copolymer of ethylene, at least one C_3 to C_6 α-olefin, and at least one nonconjugated diene, said unsaturated compound being present in the adduct in an amount such that the anhydride functionality is at least 0.05 meq/g of adduct, and 0–8% of (A), (B) and (C) of a toughening extender; and

(C) at least 24% by weight of (A), (B) and (C) of a flame retardant system composed of

(i) at least 17% by weight of (A), (B) and (C) of octabromodiphenyl ether, and

(ii) antimony trioxide present in an amount of at least 5.9% by weight of (A), (B) and (C).

4,376,183

INORGANIC FILMS WITH POLY(VINYL ALCOHOL) AND COATING COMPOSITIONS FOR MAKING THEM

Vernon C. Haskell, Circleville, Ohio, assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Sep. 14, 1981, Ser. No. 301,515
Int. Cl.³ C08K 3/32
U.S. Cl. 524—417 6 Claims

1. A substantially continuous, gas-impermeable, film of high barrier quality comprising a homogeneous combination of:

(i) 85 to 98 weight percent metal orthophosphate wherein the atom ratio of metal to phosphorus is from 0.5 to 2.3 and the metal is more than 50 atom percent aluminum or iron and less than 50 atom percent tin, titanium, or zirconium; and (ii) 2 to 15 weight percent poly(vinyl alcohol) reacted with a dialdehyde having more than two and less than eight carbon atoms.

6. A coating composition comprising an aqueous dispersion having less than 10 weight percent solids of which 85 to 98 weight percent is metal orthophosphate formed from metal and phosphate wherein more than 50 atom percent of the metal is aluminum or iron and less than 50 atom percent of the metal is tin, titanium, or zirconium and of which 2 to 15 weight percent is poly(vinyl alcohol) and a dialdehyde having more than two and less than eight carbon atoms, the dialdehyde being present in a mol ratio range of 2 to 10 vinyl alcohol to dialdehyde.

4,376,184

RUBBER COMPOSITIONS OF ETHYLENE-PROPYLENE ELASTOMERS

Kunio Itoh; Toshimichi Oshima, and Nobuyuki Uesugi, all of Annaka, Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed Feb. 27, 1981, Ser. No. 238,683
Claims priority, application Japan, Feb. 25, 1980, 55-23524
Int. Cl.³ C08K 3/36; C08L 23/16, 83/06
U.S. Cl. 524—492 3 Claims

1. A curable rubber composition which comprises

(a) 100 parts by weight of a mixture composed of

(a-1) from 40 to 99% by weight of an ethylene-propylene copolymeric elastomer, and

(a-2) from 60 to 1% by weight of an organopolysiloxane gum having an average degree of polymerization of at least 1000 and containing at least one alkenyl group in a molecule,

(b) from 10 to 150 parts by weight of a reinforcing silica filler having a specific area of at least 50 m^2/g,

(c) from 0.5 to 10 parts by weight of N,N'-m-phenylene bismaleimide or N,N'-(2,4-tolylene)dimaleimide,

(d) from 0.1 to 10 parts by weight of a curing agent,

4,376,185

ORGANO-POLYSILOXANE-POLYESTER-VINYL GRAFT COPOLYMERS

Heinrich Alberts; Hans Friemann; Hans-Heinrich Moretto, all of Cologne, and Hans Sattlegger, Odenthal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Nov. 14, 1980, Ser. No. 207,033
Claims priority, application Fed. Rep. of Germany, Nov. 28, 1979, 2947964
Int. Cl.³ C08L 67/02, 83/06, 83/10
U.S. Cl. 525—29 12 Claims

1. A room-temperature curable co-grafted polymer comprising units of an organopolysiloxane polymer with at least two OH functional groups, a polyester polymer and of a vinyl monomer, polymeric units of the vinyl monomer linking the organopolysiloxane to the polyester units.

4,376,186

THERMOPLASTIC COMPOSITION HAVING IMPROVED IMPACT MODIFIER AND PROCESS FOR PRODUCTION

Glenn D. Cooper, Delmar, N.Y., assignor to General Electric Company, Pittsfield, Mass.

Filed Nov. 26, 1980, Ser. No. 210,643
Int. Cl.³ C08L 61/04
U.S. Cl. 525—68 11 Claims

1. In a thermoplastic composition comprising an admixture of polyphenylene ether and butadiene-modified alkenyl aromatic resin, the improvement wherein said resin comprises network polymer combining polyalkenyl aromatic resin and polybutadiene membrane, wherein the polybutadiene membrane forms a continuous phase in said resin.

4,376,187

HIGH SOLIDS URETHANE COATINGS WITH ENHANCED FLEXIBILITY AND IMPACT STRENGTH

Ares N. Theodore, Farmington Hills, and Mohinder S. Chattha, Livonia, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Dec. 28, 1981, Ser. No. 334,683
Int. Cl.³ C08L 75/00
U.S. Cl. 525—123 39 Claims

1. A thermosetting coating composition exhibiting improved flexibility and impact strength and having excellent weatherability and comprising:

(A) a modified hydroxy acrylic copolymer which is the stepwise reaction product of:

(i) a copolymer bearing pendant hydroxyl groups and having a number average molecular weight (M_n) of between about 1000–5000, said copolymer being prepared from (a) between about 5 and about 40 weight percent of monoethylenically unsaturated hydroxy alkyl ester of the formula $CH_2=CR_1—COOR_2$ wherein R_1 is H or an alkyl group and R_2 is a hydroxy alkyl group and (b) between about 95–60 weight percent of other monoethylenically unsaturated monomers;

(ii) dicarboxylic acid anhydride comprising at least about 50 percent by weight of an alkyl hexahydrophthalic anhydride, wherein (i) and (ii) are reacted in an amount sufficient to esterify between about 30 and about 100 percent of said pendant hydroxyl groups of said copolymer thereby generating pendant carboxyl groups; and

(iii) a monoepoxide functional monomer comprising at least about 90 percent by weight C_2–C_{10} monoepoxide functional monomers, wherein said monomer is reacted with said pendant carboxyl groups of the polymer reaction product of (i) and (ii) so as to provide at least about 1.0 equivalent of epoxide groups per equivalent of said pendant carboxyl groups to generate pendant hydroxyl groups;

(B) a polyisocyanate crosslinking agent having two or more reactive isocyanate groups per molecule;

(C) 0–50 weight percent based on the total weight of (A), (B) (C), and (D) of a hydroxy functional additive having a number average molecular weight (M_n) of between about 150 and about 6000, and

(D) solvent

said polyisocyanate crosslinking agent being included in said composition in an amount sufficient to provide between about 0.50 and about 1.6 reactive isocyanate groups for each equivalent of hydroxyl functionality included in said composition either as a hydroxyl group on said modified hydroxy acrylic copolymer or as a hydroxyl group on said hydroxy functional additive.

4,376,188

HIGH MELT STRENGTH COMPOSITION COMPRISING MODIFIED POLYCAPROLACTAM AND IMPACT MODIFIER

Ghazi M. A. Khattab, Succasunna, N.J., assignor to Allied Corporation, Morris Township, Morris County, N.J.

Division of Ser. No. 128,438, Mar. 10, 1980, Pat. No. 4,319,007. This application Jun. 12, 1981, Ser. No. 273,126

Int. Cl.³ C08L *23/16, 77/02*

U.S. Cl. 525—183 **12 Claims**

1. A composition possessing sufficient melt strength for the blow-molding of shaped articles comprising the reaction product between polycaprolactam, having a melt index of at least 3 grams/10 minutes, aminoalkyltrialkoxysilane, and a catalytic amount of water, said reaction product being substantially free of trialkoxysilane groups, and said composition further comprising 1 to 50 percent by weight of the composition of an impact modifier, said composition possessing a melt index below about 2.25 g/10 min.

4,376,189

RUBBER COMPOSITIONS AND METHOD OF TREATING RUBBER

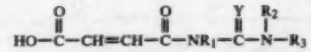
Chester D. Trivette, Akron, Ohio, assignor to Monsanto Company, St. Louis, Mo.

Filed Nov. 17, 1981, Ser. No. 322,141

Int. Cl.³ C08F *279/02*

U.S. Cl. 525—291 **53 Claims**

1. A composition comprising diene rubber containing a modifying amount of a compound of the formula



in which R_1, R_2, and R_3 are the same or different radicals selected from hydrogen, phenyl and alkyl of 1–10 carbon atoms, including cycloalkyl of 3–10 carbon atoms, optionally forming a heterocyclic moiety together with one or both of the N atoms of the formula, with or without an added hetero N or O atom, and Y is a sulfur or oxygen atom.

4,376,190

CATION COMPLEXES BETWEEN CATION GUESTS AND POLYMER HOSTS THAT CONTAIN CYCLIC ETHER UNITS

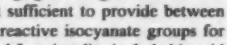
William J. Schultz; Margaret C. Etter; Alphonsus V. Pocius, and Samuel Smith, all of St. Paul, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Nov. 26, 1979, Ser. No. 97,486

Int. Cl.³ C08F *8/42*

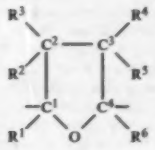
U.S. Cl. 525—333.1 **33 Claims**

1. A complex that comprises a cation guest and a polymer host wherein said polymer host has a number average molecular weight of at least 1000 and contains one or more cation-complexing segments of the formula



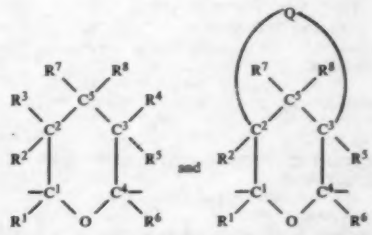
wherein said segments comprise at least 5% by weight of said polymer and wherein A is a cyclic ether selected from

(a) tetrahydrofuran 2,5-diyl units of the formula

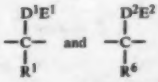


and

(b) tetrahydropyran 2,6-diyl units of the formulae



wherein R^1 through R^6 are individually selected from hydrogen and hydrocarbon groups; R^7 and R^8 are individually selected from hydrogen, hydrocarbon groups and halo groups; Q is a divalent linking moiety; B^1 and B^2 are individually selected from A,



wherein D^1 and D^2 are individually selected from oxygen and sulfur and E^1 and E^2 are individually selected from hydrogen, lower alkyl groups, cycloalkyl groups and aryl groups;

n is an integer of at least 2; and

~~~~ represents the remainder of the polymer chain;

provided that at least one half of the R^1 through R^8 groups are hydrogen; and

provided that when there are four or more A groups joined consecutively together in said cation-complexing segment, at least about 30% of the junctures between adjacent A groups have a threo configuration.
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4,376,191

USE OF DIALKYLZINC COMPOUNDS TO INITIATE POLYMERIZATION OF ETHYLENE WITH CHROMIUM OXIDE CATALYSTS

Reginald W. Geck, Victoria, Tex., assignor to Union Carbide Corporation, Danbury, Conn.

Filed Oct. 1, 1981, Ser. No. 307,580
Int. Cl.³ C08F 4/78
U.S. Cl. 526—102 28 Claims

1. A method for initiating homopolymerization of ethylene, or copolymerization of ethylene with at least one other alpha-olefin containing from 3 to 8 carbon atoms, in a fluidized bed reactor employing a supported chromium oxide catalyst which comprises (1) adding a dialkylzinc compound to the fluidized bed reactor prior to the commencement of polymerization and subjecting the reactor containing such dialkylzinc compound to a pressure of from 50 psi to 350 psi and a temperature of from 75° C. to 115° C. for at least 5 minutes, said dialkylzinc compound having the formula

$$ZnR_aR_b$$

wherein R_a and R_b are alkyl radicals containing from 1 to 12 carbon atoms, and said dialkylzinc compound being added to said fluidized bed reactor in an amount sufficient to provide from 1 mol to 5,000 mols of zinc per mol of chromium required to maintain a catalytically effective amount of such catalyst in the reactor during polymerization, and then (2) introducing a supported chromium oxide catalyst into the fluidized bed reactor at a rate of from 25 percent to 100 percent of the rate employed during polymerization to maintain a catalytically effective amount of such catalyst in the reactor, and maintaining said temperature and pressure until polymerization begins.

4,376,192

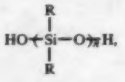
ROOM TEMPERATURE-CURABLE ORGANOPOLYSILOXANE COMPOSITIONS

Toshio Takago; Masatoshi Arai; Takeo Inoue, and Masami Terashima, all of Annaka, Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed Mar. 15, 1982, Ser. No. 358,296
Claims priority, application Japan, Mar. 31, 1981, 56-47550
Int. Cl.³ C08G 77/04
U.S. Cl. 528—33 9 Claims

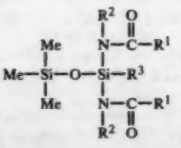
1. A room temperature-curable organopolysiloxane composition which comprises

(a) 100 parts by weight of a diorganopolysiloxane having a substantially linear molecular structure with silanolic hydroxy groups as the terminal groups at both molecular chain ends expressed by the general formula



in which R is a monovalent hydrocarbon group and n is a positive integer giving the degree of polymerization of the di organopolysiloxane,

(b) from 1 to 20 parts by weight of a 1,1,1-trimethyl-3-hydrocarbyl-3,3-di(acylamino)disiloxane represented by the general formula



in which Me is a methyl group, R^1 is a hydrogen atom or an alkyl or aryl group, R^2 is an alkyl or aryl group and R^3 is an alkyl group having from 1 to 4 carbon atoms, vinyl group or phenyl group,

(c) from 0.1 to 10 parts by weight of an aminoxy-containing organopolysiloxane expressed by the average unit formula

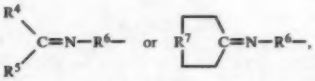
$$(R)_a(Y)_bSiO_{\frac{4-a-b}{2}},$$

in which R has the same meaning as defined above, Y is a mono- or di(hydrocarbyl)-substituted aminoxy group, a is a positive number in the range from 0.5 to 2.96 inclusive and b is a positive number in the range from 0.04 to 10 inclusive with the proviso that a+b is in the range from 1 to 3 inclusive,

(d) from 0.01 to 5 parts by weight of an organopolysiloxane expressed by the average unit formula

$$(R)_c(Y)_d(X)_eSiO_{\frac{4-c-d-e}{2}},$$

in which R and Y each have the same meaning as defined above, X is a group represented by the general formula



R^4 being a monovalent hydrocarbon group free from aliphatic unsaturation, R^5 being a hydrogen atom or a monovalent hydrocarbon group free from aliphatic unsaturation, R^6 being a divalent hydrocarbon group having at least 2 carbon atoms and R^7 being a divalent hydrocarbon group having 4 to 8 carbon atoms, c is a positive number in the range from 0.5 to 2.96 inclusive, d is a positive number in the range from 0.03 to 1.0 inclusive and e is a positive number in the range from 0.01 to 1.0 inclusive with the proviso that c+d+e is in the range from 1 to 3 inclusive,

(e) from 0.001 to 5 parts by weight of a curing catalyst, and

(f) from 1 to 400 parts by weight of a filler.

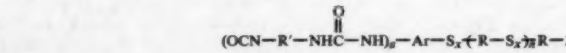
4,376,193

ARYL AMINE TERMINATED POLYSULFIDE POLYMERS, RELATED COMPOUNDS AND PROCESSES FOR THEIR PREPARATION

Eugene R. Bertozzi, Yardley, Pa., assignor to Thiokol Corporation, Newtown, Pa.

Division of Ser. No. 66,214, Aug. 10, 1979, Pat. No. 4,238,585.
This application Jan. 22, 1980, Ser. No. 114,438
Int. Cl.³ C08G 18/38
U.S. Cl. 528—59 5 Claims

1. A compound of the formula:



wherein Ar is an a+1 valent radical derived by removal of a+1 nuclear hydrogens from a substituted or unsubstituted aryl moiety either carbocyclic or heterocyclic and having 1 or 2 aromatic rings; R is a hydrocarbon, oxahydrocarbon, or thiahydrocarbon radical; a is 1 or 2; n is about 4 to about $k \times 10^3$ wherein k is 1 to about 10 and x is from 1.8 to about 4; and Z is

and R′ is a polyvalent aliphatic, aromatic or aliphatic aromatic radical or when taken together with the

and NCO moieties is the residue of an isocyanate terminated polyurethane prepolymer.

4,376,194

POLYESTER AMIDE AND PROCESS FOR PRODUCING THE SAME

Chiaki Tanaka, Chita; Shinobu Nakashima, and Nagayoshi Naito, both of Nagoya, all of Japan, assignors to Toray Industries, Inc., Tokyo, Japan

PCT No. PCT/JP80/00316, § 371 Date Aug. 17, 1981, § 102(e) Date Aug. 17, 1981, PCT Pub. No. WO81/01854, PCT Pub. Date Jul. 9, 1981

PCT Filed Dec. 22, 1980, Ser. No. 293,629

Claims priority, application Japan, Dec. 21, 1979, 54-165588; Dec. 28, 1979, 54-170350; Jan. 22, 1980, 55-6213

Int. Cl.³ C08G *63/44, 69/44*

U.S. Cl. 528—288 **12 Claims**

1. A polyester amide comprising (A) an ester unit derived mainly from a benzenedicarboxylic acid and 1,4-butanediol and (B) an amide unit comprising dodecaneamide and/or undecaneamide in a weight ratio of ester unit to amide unit of from 5:95 to 95:5.

5. A process for producing a polyester amide which comprises copolymerizing (a) at least one acid component selected from benzenedicarboxylic acids and ester-forming derivatives thereof, (b) at least one diol component selected from 1,4-butanediol and its ester-forming derivative and (c) at least one amide-forming component selected from 12-aminododecanoic acid, 11-aminoundecanoic acid and amide-forming derivatives thereof.

4,376,195

METHOD OF PREPARING HIGH PURITY POLYAMIC ACIDS FOR USE IN ELECTRONIC CIRCUITRY

Ying K. Lee, Cherry Hill, N.J., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jan. 7, 1982, Ser. No. 337,668

Int. Cl.³ C08G *73/10*

U.S. Cl. 528—353 **1 Claim**

1. A method of increasing the yield of a high purity polyamic acid that is the reaction product of a diamino compound and a polycarboxylic acid dianhydride, comprising:

a. purifying an inert solvent by distillation or ion-exchange;

b. purifying the dianhydride by sublimation;

c. purifying the diamino compound by a slurry process that involves the repeated washing of the diamino compound first with deionized water and then methanol; and

d. reacting the purified diamino compound with the purified dianhydride in the purified inert solvent.

4,376,196

ARYLENE SULFIDE POLYMER PURIFICATION

Fred T. Sherk, and James T. Edmonds, Jr., both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Oct. 6, 1980, Ser. No. 194,305

Int. Cl.³ C08F *6/24*

U.S. Cl. 528—481 **6 Claims**

1. A process for the concurrent reduction of ash-forming impurities contained in prepurified arylene sulfide polymers and production of at least partially cured polymer which comprises contacting an aqueous slurry consisting essentially of particulate purified raw arylene sulfide polymer substantially freed of organic amide, unreacted reactants, alkali metal halide, containing residual ash-forming impurities or materials and water with an oxygen-containing gas at an elevated temperature not exceeding about 25° F. below the melting point of the polymer for a period of time sufficient to reduce the ash content and, at the same time, at least partially cure and reduce the melt flow of the polymer.

4,376,197

INDOXYLMALTODEXTRINS, A PROCESS FOR THEIR PREPARATION AND THEIR USE

Kurt Wallenfels, Freiburg, Fed. Rep. of Germany, assignor to Behringwerke Aktiengesellschaft, Marburg an der Lahn, Fed. Rep. of Germany

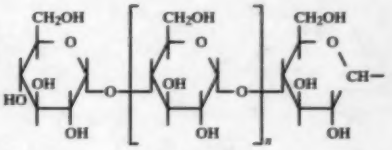
Filed Jan. 2, 1981, Ser. No. 222,046

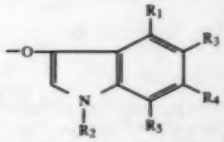
Claims priority, application Fed. Rep. of Germany, Jan. 5, 1980, 3000292

Int. Cl.³ C08B *37/16*

U.S. Cl. 536—17.4 **2 Claims**

1. Indoxylmaltodextrins which have the general formula:





in which n is an integer from 1 to 9, R_1, R_3, R_4 and R_5 are halogen, alkyl or alkoxy with 1–5 carbon atoms, phenyl, substituted phenyl, phenoxy, substituted phenoxy, nitro or hydrogen, R_2 is H, lower alkyl or lower alkoxy with 1–3 C atoms in the alkyl chain and the heterosidic glucoside bond has the α- or β-configuration.

4,376,198

PROCESS FOR THE MANUFACTURE OF GLUCOSYLSORBITOL

Basant K. Dwivedi, and Subodh K. Raniwala, both of Randolph, N.J., assignors to Chimicasa GmbH, Switzerland

Continuation of Ser. No. 111,272, Jan. 11, 1980, abandoned. This application Sep. 25, 1981, Ser. No. 305,694

Int. Cl.³ C07H *15/02, 15/04*

U.S. Cl. 536—4.1 **8 Claims**

1. A process of preparing glucosylsorbitol suitable for direct use as a food-bulking agent, which process consists essentially of heating equimolar quantities of a mixture of glucose and sorbitol under vacuum in the presence of an effective amount of a nontoxic, edible, di or tri carboxylic organic acid or acid anhydride as an acid catalyst, to provide, without further purification, a nontoxic, edible, solid, light-color mixture consisting essentially of the dimer glucosylsorbitol as a major component thereof.

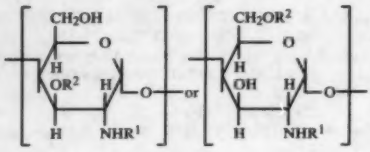
4,376,199

SHAPED MATERIAL OF CHITIN DERIVATIVES

Junichi Koshugi, Tokyo, Japan, assignor to Kureha Kagaku Kogyo Kabushiki Kaisha, Japan

Filed Oct. 17, 1980, Ser. No. 198,193
Claims priority, application Japan, Oct. 24, 1979, 54-137337
Int. Cl.³ C08B 37/08
U.S. Cl. 536—20 3 Claims

1. A shaped material of a chitin derivative having a surface layer consisting essentially of chitin derivative obtained by acylation or acid-treatment of a 3,6′ or 3,N,6′ cross-linked ionic chitin-derivative of which the main structural unit is represented by the formula:



wherein R^1 represents a hydrogen atom, $-C_nH_{2n+1}$ or $-(CH_2)_nOH$; R^2 represents a hydrogen atom, $-C_{n'}H_{2n'+1}$, $-(CH_2)_nOH$, $-(CH_2)_{n'}CH(OH)CH_2OH$ or $-(CH_2)_{n'}$-COOM, wherein n is an integer of 1 to 20, n′ is an integer of 1 to 3 and M represents a hydrogen atom, an alkali metal atom or an atomic equivalent amount of an alkaline earth metal, or a de-N-acylated acyl chitin having an acyl group of $-CO(CH_2)_{n-1}CH_3$ and which is cross-linked at a rate of 0.01 to 0.3 per pyranose ring.

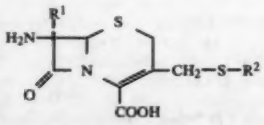
4,376,200

HETEROCYCLIC THIOMETHYLATION OF THE 3-POSITION OF 7-AMINOCEPHALOSPORANIC ACIDS

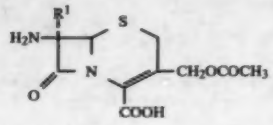
Teruaki Ozasa, Urawa, and Teruya Kashiwagi, Ageo, both of Japan, assignors to Yamanouchi Pharmaceutical Co. Ltd., Tokyo, Japan

Filed Apr. 7, 1980, Ser. No. 137,632
Claims priority, application Japan, Apr. 19, 1979, 54-48211
Int. Cl.³ C07D 501/18
U.S. Cl. 544—26 8 Claims

1. A process of producing a 7-amino-3-heterocyclic thiomethyl-Δ^3-cephem-4-carboxylic acid represented by the formula



wherein R^1 represents a hydrogen atom or a methoxy group and R^2 represents a member selected from the group consisting of a thiazolyl group, an oxazolyl group, an isothiazolyl group, a thiadiazolyl group, a triazolyl group, and a tetrazolyl group, whch are substitutable by a lower alkyl group, a carboxy lower alkyl group, a di-lower alkylamino lower alkyl group wherein lower alkyl represents 1 to 6 carbon atoms, and an amino group, or the pharmaceutically acceptable salts thereof, which comprises reacting a 7-amino cephalosporanic acid represented by the formula



wherein R^1 is defined above and the alkali metal, ammonium or organic base salts thereof and a thiol represented by the general formula

$$HS-R^2$$

wherein R^2 is defined above, in a substantially anhydrous medium consisting essentially of concentrated or fuming sulfuric acid.

4,376,201

PREPARATION OF 2-ALKYLPYRIMIDINES

Richard G. Pews, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Sep. 14, 1981, Ser. No. 301,688
Int. Cl.³ C07D 239/26
U.S. Cl. 544—242 5 Claims

1. A process for making 2-alkylpyrimidines which comprises dehydrogenating and cyclizing a 3-aminopropyl carboxylic acid amide in a single step vapor phase reaction over a supported platinum or palladium catalyst.

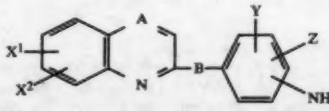
4,376,202

ANILINE DERIVATIVE AND PROCESS FOR PRODUCTION THEREOF

Yasukazu Ura; Gojyo Sakata; Kenji Makino; Yasuo Kawamura; Kazuya Kusano, and Jun Satow, all of Funabashi, Japan, assignors to Nissan Chemical Industries, Ltd., Tokyo, Japan

Filed Jun. 22, 1981, Ser. No. 275,849
Claims priority, application Japan, Oct. 24, 1980, 55-149014
Int. Cl.³ C07D 241/44, 215/22; A01N 43/60, 43/42
U.S. Cl. 544—354 7 Claims

1. An aniline derivative represented by the following formula I:



(I)

wherein A denotes nitrogen atom; B denotes oxygen atom or sulfur atom; X^1 and X^2, independently of each other, denote hydrogen atom, halogen atom, trifluoromethyl group or nitro group; and Y and Z, independently of each other, denote hydrogen atom or halogen atom.

4,376,203

NOVEL 3-ACETOXYMETHYL-7-(IMINOACETAMIDO)-CEPHALOSPORANIC ACID DERIVATIVES

Rene Heyles, Romainville, and Andre Lutz, Strasbourg, both of France, assignors to Roussell Uclaf, Paris, France

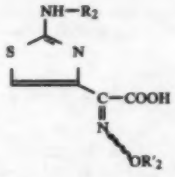
Continuation of Ser. No. 71,295, Aug. 30, 1979, abandoned, which is a division of Ser. No. 917,985, Jun. 22, 1978, Pat. No. 4,283,396, which is a division of Ser. No. 817,114, Jul. 19, 1977, Pat. No. 4,152,432, which is a continuation-in-part of Ser. No. 761,270, Jan. 21, 1977, abandoned. This application Apr. 27, 1981, Ser. No. 257,984

Claims priority, application France, Jan. 23, 1976, 76 01834; Jun. 11, 1976, 76 17743; Aug. 18, 1976, 76 25051; Japan, Mar. 11, 1977, 52-07307

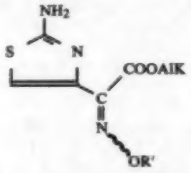
Int. Cl.³ C07D 277/42

U.S. Cl. 548—194 8 Claims

1. A compound selected from the group consisting of (A) a compound of the formula

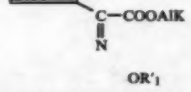


wherein R_2 is selected from the group consisting of hydrogen and trityl and R_2' is methyl and OR_2' is in the syn position, (B) a compound of the formula IV



IV

wherein R′ is trityl and AIK is alkyl of 1 to 4 carbon atoms and OR′ is in the syn position and (C) a compound of the formula



V

wherein R_1 is trityl, R_1' is methyl and AIK is alkyl of 1 to 4 carbon atoms and OR_1' is in the syn position.

4,376,204

3-HYDROXY 2-METHYL BENZISOTHIAZOLINES AS INTERMEDIATES IN PRODUCTION OF PIROXICAM

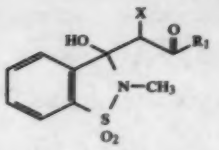
Paul D. Weeks, Gales Ferry, Conn., assignor to Pfizer Inc., New York, N.Y.

Filed Oct. 5, 1981, Ser. No. 308,746

Int. Cl.³ C07D 275/04

U.S. Cl. 548—210 4 Claims

1. A compound selected from the group consisting of those of the formula



wherein X is selected from the group consisting of chloro, bromo and iodo; and R_1 is selected from the group consisting of alkoxy having from one to four carbon atoms and 2-methoxyethoxy.

4,376,205

PROCESS FOR THE PREPARATION OF INDOLES FROM ANILINES AND ETHANOLAMINES

Fujio Matsuda, Kanagawa, and Takazo Kato, Ohimachi, both of Japan, assignors to Mitsui Toatsu Chemicals, Inc., Tokyo, Japan

Filed Apr. 15, 1981, Ser. No. 254,549

Int. Cl.³ C07D 209/02

U.S. Cl. 548—508 11 Claims

1. A process for the preparation of an indole which comprises the step of contacting an aniline selected from the group consisting of aniline, o-toluidine, m-toluidine, p-toluidine, o-haloaniline, m-haloaniline, p-haloaniline, o-aminophenol, m-aminophenol, p-aminophenol, o-anisidine, m-anisidine and p-anisidine with an ethanolamine selected from the group consisting of monoethanolamine, diethanolamine and triethanolamine in the presence of a solid acid catalyst, in the vapor phase at a temperature of from 200° to 600° C., or in the liquid phase or a mixed vapor-liquid phase at a temperature of from 200° to 500° C.

4,376,206

N-ALKENYLPHENYLMALEIMIDES AND N,N′-[ALKENYLENE PHENYLENE]BISMALEIMIDES FOR THE SAME

Masayuki Oba, Tokyo; Motoo Kawamata, Yokohama; Hikotada Tsuboi, Yokohama, and Nobuhito Koga, Yokohama, all of Japan, assignors to Mitsui Toatsu Chemicals, Inc., Tokyo, Japan

Filed Mar. 19, 1980, Ser. No. 131,804

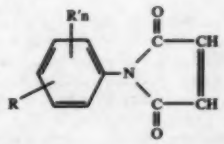
Claims priority, application Japan, Mar. 28, 1979, 54-35653

Int. Cl.³ C07D 207/40

U.S. Cl. 548—546 11 Claims

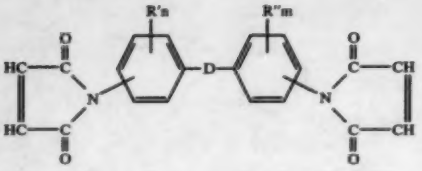
1. A maleimide compound selected from the group consisting of

(a) alkenylphenylmaleimides having the formula



where R is an alkenyl group of from 3 to 12 carbon atoms, R′ is a hydrogen atom, a halogen atom, or an alkyl group of from 1 to 4 carbon atoms, and n is a whole number of from 1 to 4; and

(b) bismaleimides having the formula



where R′ and R″ can be the same or different and are hydrogen atoms, halogen atoms, or alkyl radicals of from 1 to 4 carbon atoms, n and m are whole numbers of from 1 to 4, and D is an ethylenically unsaturated hydrocarbon group of from 6 to 24 carbon atoms.

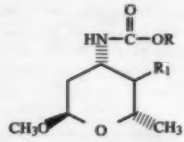
4,376,207

CHIRAL SYNTHESIS OF AMINO SUGARS

Milan R. Uskokovic, Upper Montclair, and Peter M. Wovkulich, Nutley, both of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 179,126, Aug. 18, 1980, Pat. No. 4,324,726, which is a division of Ser. No. 60,261, Jul. 25, 1979, Pat. No. 4,252,964. This application Dec. 2, 1981, Ser. No. 326,731
Int. Cl.³ C07D 309/02
U.S. Cl. 549—417 4 Claims

1. A compound of the formula:



wherein R is lower alkyl; R_1 is [redacted]OR_2 or ///OH; and R_2 is hydrogen, phenylsulfonyloxy, lower alkyl-substituted phenylsulfonyloxy, or lower alkylsulfonyloxy or enantiomers or racemic mixtures thereof.

4,376,208

HYDROFORMYLATION OF DIHYDROFURAN

David E. Vietti, Cary, Ill., assignor to The Quaker Oats Company, Chicago, Ill.

Filed Aug. 17, 1981, Ser. No. 293,533
Int. Cl.³ C07D 307/12, 307/20
U.S. Cl. 549—478 3 Claims

1. A method for the hydroformylation of a a dihydrofuran comprising the steps of:

(a) reacting said dihydrofuran in a reaction vessel with carbon monoxide and hydrogen in the presence of a catalyst,

(b) said catalyst comprising a rhodium complex selected from the group of rhodium carbonyls, aryl phosphine rhodium carbonyl complexes and polymer bound rhodium phosphine complexes,

(c) causing said reaction to occur at a temperature in the range of from about 25° C. to 180° C. and at a pressure of from about 1000 psig,

(d) allowing said reaction to continue for a period of time sufficient to hydroformylate said dihydrofuran reactants,

(e) thereby producing aldehydic tetrahydrofurans having one more carbon atom than the cyclic reactants.

4,376,209

PROCESS FOR PRODUCTION OF ETHYLENE OXIDE

Fumio Watanabe, Kawasaki; Masashi Mitsuhata, and Toshihiko Kumazawa, both of Yokohama, all of Japan, assignors to Nippon Shokubai Kagaku Kogyo Co., Ltd., Japan

Continuation of Ser. No. 60,744, Jul. 25, 1979, abandoned. This application Sep. 18, 1980, Ser. No. 188,464
Claims priority, application Japan, Jul. 26, 1978, 53-90462
Int. Cl.³ C07D 301/10
U.S. Cl. 549—534 11 Claims

1. A process for the production of ethylene oxide by the vapor-phase catalytic oxidation of ethylene with molecular oxygen, which process comprises passing a mixed gas containing ethylene and molecular oxygen through a catalyst bed filled with a silver catalyst and subsequently passing the resultant reaction product gas through a cooling zone filled with a particulate material having a specific surface area exceeding 0.1 m^2/g but not exceeding 5 m^2/g, containing a substance capable of inhibiting the isomerization of ethylene oxide to acetaldehyde containing at least one metal selected from the group consisting of calcium, strontium and barium or a compound of said metal to be carried on an inert refractory particulate material.

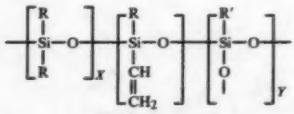
4,376,210

VINYL POLYSILOXANE POLYMERS RELEASE COMPOSITIONS AND METHODS

Mike S. H. Chang, Danbury, Conn., assignor to Pitney Bowes Inc., Stamford, Conn.

Filed Feb. 2, 1981, Ser. No. 230,789
Int. Cl.³ C07F 7/08
U.S. Cl. 556—450 5 Claims

1. Liquid vinyl polysiloxane polymer having the moeity structure:



. . . wherein X is a number greater than 1; Y is a number selected from a range of greater than 0 and up to about 10; R is the same or different monovalent hydrocarbon radicals selected from the group consisting of C_1 to C_4 alkyl groups, cyclohexyl groups and phenyl groups; and R′ is a R group or an oxygen radical.

4,376,211

TRIS(N-CARBALKOXYLAMINOMETHYL)PHOSPHINE OXIDES AND SULFIDES

Arlen W. Frank, Slidell, La., assignor to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Division of Ser. No. 964,852, Nov. 29, 1978, Pat. No. 4,249,017. This application Apr. 30, 1979, Ser. No. 34,877
Int. Cl.³ C07F 9/22
U.S. Cl. 560—158 2 Claims

1. A process for methylolating a tris(N-carbalkoxylaminomethyl)phosphine oxide which comprises reacting the substance with three or more molar equivalents of formaldehyde in aqueous solution in the presence of an acid catalyst; and recovering the product from the resulting reaction mixture.

4,376,212

ISONONYL ACRYLATE MONOMER COMPOSITION

Eiji Ohyama; Hiroo Nagai, and Masahito Yoshimura, all of Tokyo, Japan, assignors to Nissan Chemical Industries Ltd., Tokyo, Japan

Filed Aug. 31, 1981, Ser. No. 298,188
Claims priority, application Japan, Sep. 29, 1980, 55/134465
Int. Cl.³ C07C 69/54
U.S. Cl. 560—205 4 Claims

1. An isononyl acrylate monomer composition of acrylates of C_9 alcohols obtained by a hydroformylation and a hydrogenation of C_8 olefins obtained by a dimerization of butenes under an elevated pressure in the presence of at least one of nickel compounds selected from the group consisting of nickel oxygen compounds, nickel sulfur compounds and nickel organic acid salts, and at least one of metal alkyl halides having the formulas $R_3Al_2X_3$ and $RAlX_2$ where X is chlorine or bromine and R is an aklyl group.

4,376,213

METHOD FOR OPTICAL RESOLUTION OF 2-(4-CHLOROPHENYL)-3-METHYLBUTANOIC ACID

Hiroyuki Nohira, Urawa; Daiyo Terunuma, Oomiya, and Shinji Koube, Tokyo, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Feb. 1, 1982, Ser. No. 344,523
Claims priority, application Japan, Mar. 6, 1981, 56-31248
Int. Cl.³ C07B 19/00
U.S. Cl. 562—401 6 Claims

1. A method for optical resolution of 2-(4-chlorophenyl)-3-methylbutanoic acid by preferential crystallization, comprising the steps of: (a) crystallizing out the salt of (+) or (−)-2-(4-chlorophenyl)-3-methylbutanoic acid and diethylamine in a molar proportion of 2:1 from a super-saturated solution of the salt of 2-(4-chlorophenyl)-3-methylbutanoic acid with diethylamine; (b) collecting the crystallized salt; and (c) decomposing the collected salt under acidic conditions to obtain the corresponding optically active acid.

4,376,214

PROCESS FOR THE PREPARATION OF NAPHTHALENE-1,4-DICARBOXYLIC ACID

Hans Frischkorn, and Erich Schinzel, both of Hofheim am Taunus, Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Jun. 22, 1981, Ser. No. 275,921
Claims priority, application Fed. Rep. of Germany, Jul. 2, 1980, 3025016
Int. Cl.³ C07C 51/08
U.S. Cl. 562—484 3 Claims

1. Process for the preparation of naphthalene-1,4-dicarboxylic acid, wherein 4-bromo-1-naphthoic acid is reacted with at least 1 mole of copper-(I) cyanide per mole of 4-bromonaphthoic acid in a polar, aprotic solvent at a temperature of 150°–250° C. and the copper salt complex of 4-cyanonaphthoic acid thus obtained is saponified in an alkaline medium.

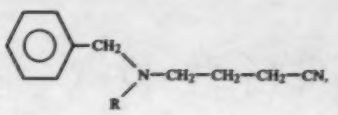
4,376,215

PROCESS FOR THE PRODUCTION OF 4-AMINOBUTYRAMIDE HYDROCHLORIDE

Klaus Deller, Hainburg; Axel Kleemann, Hanau; Jürgen Martens, Alzenau, and Horst Weigel, Rodenbach, all of Fed. Rep. of Germany, assignors to Degussa AG, Frankfurt am Main, Fed. Rep. of Germany

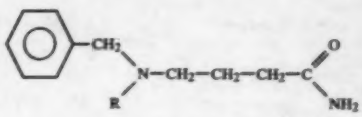
Filed Nov. 16, 1981, Ser. No. 321,702
Claims priority, application Fed. Rep. of Germany, Dec. 18, 1980, 3047753
Int. Cl.³ C07C 103/183
U.S. Cl. 564—198 17 Claims

1. A process for the production of 4-aminobutyramide comprising (a) saponifying a substituted butyronitrile of the formula



(I)

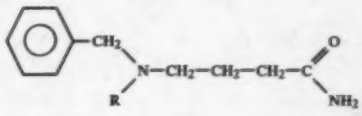
in which R is hydrogen or a benzyl group, or an acid addition salt thereof to the corresponding butyramide of the formula



(II)

or an acid addition salt thereof, (b) if the butyramide of formula (II) is not in the form of the hydrochloride converting it to the hydrochloride, and (c) subjecting the hydrochloride of the butyramide of formula (II) in the presence of an inert solvent and a platinum group metal catalyst to hydrogenation.

13. A process for the production of 4-aminobutyramide hydrochloride comprising hydrogenating the hydrochloride of a butyramide of the formula



(II)

where R is hydrogen or a benzyl group in the presence of an inert solvent and a platinum group metal catalyst.

4,376,216

PROCESS FOR THE PURIFICATION OF PHOTOGRAPHIC DEVELOPER SUBSTANCES

Helmut Hüseler, Leverkusen, Fed. Rep. of Germany, assignor to Agfa-Gevaert AG, Leverkusen, Fed. Rep. of Germany

Filed Aug. 3, 1981, Ser. No. 289,415
Claims priority, application Fed. Rep. of Germany, Aug. 12, 1980, 3030480
Int. Cl.³ C07C 85/26
U.S. Cl. 564—438 8 Claims

1. A process for the purification of a compound of the p-phenylene diamine series to free it from organic impurities, wherein said compound is treated in an aqueous solution with an anionic surfactant of a pH at which the the surfactant precipitates.

4,376,217

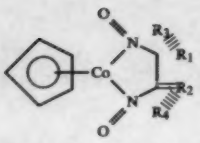
COBALT ALKYLNITROSO COMPLEXES AND METHODS THEREWITH

Robert G. Bergman, Kensington; Paul N. Becker, Berkeley, both of Calif., and Mary A. White, Schenectady, N.Y., assignors to Regents of the University of California, Berkeley, Calif.

Division of Ser. No. 177,495, Aug. 12, 1980, Pat. No. 4,328,164. This application Oct. 1, 1981, Ser. No. 307,531
Int. Cl.³ C07C 85/11, 87/32, 87/40, 87/14
U.S. Cl. 564—448 9 Claims

1. A method for preparing a diamine compound having primary adjacent amino groups comprising the steps of:

providing a reagent of the structure



wherein R_1 is phenyl, hydrogen or alkyl, R_2 is phenyl, hydrogen or alkyl, R_3 is phenyl, hydrogen or alkyl and R_4 is phenyl, hydrogen or alkyl; and,

contacting said reagent with $LiAlH_4$ to form said diamine compound as a reaction product of said reagent with said $LiAlH_4$.

4,376,218

ORGANIC PEROXIDE COMPOSITIONS

Keith J. Izzard, Dunstable; Reginald W. Stephenson; Keith C. P. Stanistreet, both of Warrington, and Iain R. Keeling, Chester, all of England, assignors to Interox Chemicals Limited, London, England

Filed Apr. 14, 1981, Ser. No. 254,164

Int. Cl.³ C07C *179/00*

U.S. Cl. 568—559 **15 Claims**

1. In a solid, plasticizer-containing, organic peroxide composition comprising at least 50% but below 70% of at least one solid organic peroxide and a plasticizer, the improvement wherein said plasticizer comprises:

at least one solid plasticizer; and

at least one liquid plasticizer, said liquid plasticizer being present in an amount of at least 10% by weight, based on the weight of the composition.

4,376,219

PROCESS FOR PREPARING AN ETHER HAVING TERTIARY ALKYL GROUP

Toshiaki Murofushi, Fuji, and Atsushi Aoshima, Yokohama, both of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Jan. 19, 1982, Ser. No. 340,668

Claims priority, application Japan, Jan. 22, 1981, 56-8414

Int. Cl.³ C07C *41/06*

U.S. Cl. 568—697 **9 Claims**

1. A process for preparing an ether having a tertiary alkyl group by reacting a primary or secondary alcohol with a tertiary olefin represented by the formula,

$$R^1HC{=}CR^2R^3$$

wherein R^1 is hydrogen or an alkyl group, and R^2 and R^3 are alkyl groups, contained in a tertiary olefin-containing mixed hydrocarbon, characterized in that said reaction is carried out at a pressure higher than the pressure at which the tertiary olefin-containing mixed hydrocarbon is kept in the liquid phase, in the presence of an adduct of the starting alcohol with a heteropoly acid or salt thereof containing at least one element selected from the group consisting of P, Si, B, Ge, As, Se, Ti, Zr, Mn, F, U, Ce and Th as a central element, at least Mo and/or W as a coordinating element and containing a cation comprising at least one of H, Li, Na, K, Rb, Cs, $NR^4R^5R^6R^7$ in which R^4, R^5, R^6 and R^7 are hydrogen atoms or alkyl groups, Mg, Ca, Ba, Zr, Cr, Mn, Fe, Co, Ni, Cu, Ag, Zn, Cd, Hg, Al, Pb and Bi, the ratio of the number of the coordinating elements to the number of the central elements being 2.5 to 12, the adduct being in a substantially solid-phase state.

4,376,220

INHIBITOR FOR REDUCING FORMATION OF CHLORINATED DIOXINS IN MANUFACTURE OF CHLORINATED PHENOLS

William H. Wetzel, Federal Way; Hsi-Lung Pan, Seattle; Robert J. Goodwin, Puyalup, and John E. Wilkinson, Gig Harbor, all of Wash., assignors to Reichhold Chemicals, Incorporated, White Plains, N.Y.

Division of Ser. No. 157,447, Jun. 9, 1980, Pat. No. 4,294,996. This application Jun. 22, 1981, Ser. No. 276,004

Int. Cl.³ C07C *39/36, 39/27*

U.S. Cl. 568—776 **5 Claims**

1. An inhibitor for use in a process of producing polychlorinated phenols to reduce the amount of chlorinated dioxins formed during the reaction of phenol or lower chlorinated phenol or mixtures thereof with chlorine said inhibitor comprising a catalyst consisting essentially of aluminum chloride, ferric chloride, cuprous chloride, metallic aluminum powder, metallic antimony, metallic copper or mixtures thereof, and a compound selected from the group consisting essentially of:

Antimony pentachloride
Chromium dichloride
Chromium powder
Chromium Sulfide
Cobalt metal
Gadolinium trichloride
Germanium tetrachloride
Hafnium tetrachloride
Indium chloride
Magnesium turnings
Manganese dichloride
Niobium chloride
Zirconium tetrachloride
Antimony powder
Bismuth trichloride
Chromium metal
Cobalt fluoride
Iridium chloride
Niobium pentachloride
Rhenium pentachloride
Rhodium trichloride
Samarium trichloride
Tantalum chloride
Tin powder
Tungsten hexachloride
Zinc fluoride
Rubidium trichloride

and mixtures thereof.

4,376,221

STABILIZATION OF DIBROMOSTYRENE

Philip F. Jackisch, 4218 Rosewold, Royal Oak, Mich. 48073

Filed Mar. 13, 1980, Ser. No. 130,185

The portion of the term of this patent subsequent to Aug. 10, 1999, has been disclaimed.

Int. Cl.³ C07C *14/42;* C09K *15/18*

U.S. Cl. 570—103 **4 Claims**

1. As a composition of matter, dibromostyrene containing a stabilizer amount of a polymerization inhibitor compound having the formula

wherein each R is alike or different and is selected from the class consisting of hydrogen and lower alkyl groups of up to about five carbon atoms.

4,376,222

CHEMICAL PROCESS

Ronald L. Shubkin, West Bloomfield, and Marguerite S. Baylerian, Huntington Woods, both of Mich., assignors to Ethyl Corporation, Richmond, Va.

Filed Dec. 19, 1980, Ser. No. 218,068
Int. Cl.³ C07C 2/74, 2/02
U.S. Cl. 585—255 5 Claims

1. In a process for producing saturated hexene-1 oligomer by a process which comprises oligomerizing hexene-1 in the presence of a Friedel-Crafts catalyst and promoter, distilling off the monomer and dimer and hydrogenating the residual product, the improvement comprising dissolving hexene-1 in said hydrogenated residual product comprising 10–75% of the reaction mixture and conducting said oligomerizing in said hydrogenated residual product whereby the oligomerization rate is substantially increased.

4,376,223

METHOD FOR PROMOTING ALUMINUM CHLORIDE CATALYZED ISOMERIZATION OF SYM OCTAHYDROPHENANTHRENE TO SYM-OCTAHYDROANTHRACENE WITH ARYL PHENONE

William T. Gormley, Pittsburgh, Pa., assignor to Koppers Company, Inc., Pittsburgh, Pa.

Filed Apr. 26, 1982, Ser. No. 372,057
Int. Cl.³ C07C 5/24, 5/30
U.S. Cl. 585—360 4 Claims

1. In a process for the isomerization of sym-octahydrophenanthrene to sym-octahydroanthracene in the presence of a catalyst comprising $AlCl_3$ or $AlBr_3$, or a mixture thereof, the improvement which comprises using an effective amount of an aryl phenone as a promoter to the catalyst to increase the rate of isomerization as compared with the rate of the unpromoted catalyst whereby the isomerization may be carried out at room temperature.

4,376,224

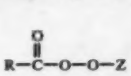
ALUMINUM CHLORIDE CATALYZED ISOMERIZATION OF SYM-OCTAHYDROPHENANTHRENE TO SYM-OCTAHYDROANTHRACENE WITH ACYL PEROXIDE

William T. Gormley, Pittsburgh, Pa., assignor to Koppers Company, Inc., Pittsburgh, Pa.

Filed Apr. 26, 1982, Ser. No. 372,059
Int. Cl.³ C07C 5/24, 5/30
U.S. Cl. 585—360 8 Claims

1. In a process for the conversion of sym-octahydrophenanthrene to sym-octahydroanthracene in the presence of catalyst comprising $AlCl_3$, or $AlBr_3$, or a mixture thereof, the improvement for increasing the rate of isomerization of sym-octahydrophenanthrene to sym-octahydroanthracene with said catalyst which comprises

carrying out the conversion in the presence of an effective amount of a promoter selected from a group of compounds represented by the general formula



wherein Z is R or

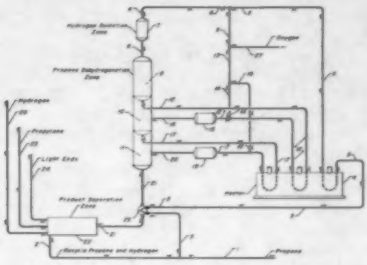
and wherein each R is independently selected from aryl, aralkyl, and alkyl substituents, with the aralkyl and alkyl substituents provided by branched or linear aliphatic groups of one to about 18 carbon atoms.

4,376,225

DEHYDROGENATION PROCESS UTILIZING INDIRECT HEAT EXCHANGE AND DIRECT COMBUSTION HEATING

Bipin V. Vora, Elk Grove Village, Ill., assignor to UOP Inc., Des Plaines, Ill.

Filed Aug. 5, 1981, Ser. No. 290,119
Int. Cl.³ C07C 5/333
U.S. Cl. 585—659 20 Claims



1. A process for the dehydrogenation of hydrocarbons which comprises the steps of:

(a) admixing oxygen into a heated feed stream comprising a C_2–C_8 hydrocarbon and hydrogen;

(b) heating the feed stream by contacting the same with a first bed of oxidation catalyst which preferentially oxidizes hydrogen as compared to the C_2–C_8 hydrocarbon;

(c) contacting the effluent of the first bed of oxidation catalyst with a first bed of dehydrogenation catalyst located within a dehydrogenation zone;

(d) heating the effluent of the first bed of dehydrogenation catalyst by indirect heat exchange;

(e) admixing oxygen into the heated effluent of the first bed of dehydrogenation catalyst;

(f) contacting the effluent of the first bed of dehydrogenation catalyst with a second bed of oxidation catalyst;

(g) contacting the effluent of the second bed of oxidation catalyst with a second bed of dehydrogenation catalyst located within the dehydrogenation zone;

(h) recovering a dehydrogenated hydrocarbon corresponding to the C_2–C_8 hydrocarbon from a dehydrogenation zone effluent stream which is withdrawn from the dehydrogenation zone; and,

(i) recovering hydrogen from the dehydrogenation zone effluent stream and recycling at least a portion of the hydrogen to the dehydrogenation zone as part of said feed stream.

4,376,226

PROCESS FOR THE SEPARATION OF ORTHO AROMATIC ISOMERS BY SELECTIVE ADSORPTION

Daniel D. Rosenfeld, Houston, Tex., and David E. W. Vaughan, Flemington, N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Feb. 5, 1982, Ser. No. 346,150
Int. Cl.³ C07C 7/12
U.S. Cl. 585—828 18 Claims

1. An adsorptive separation process for separating the ortho aromatic isomers from a hydrocarbon feed stream containing a mixture of aromatics comprising:

(a) contacting said hydrocarbon feed stream with a bed of a crystalline aluminosilicate adsorbent of CSZ-1;

(b) withdrawing from said bed of adsorbent a raffinate stream containing less of the selectively adsorbed ortho aromatic isomer of the feed stream;

(c) desorbing the adsorbed ortho aromatic isomer to effect displacement thereof; and

(d) withdrawing from the adsorbent bed an extract stream containing the ortho aromatic isomer.

4,376,227

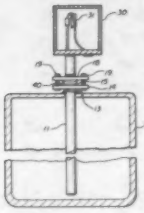
THERMOCOUPLE SEAL

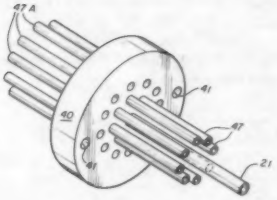
W. Dwight Hilborn, P.O. Box 5549, Pasadena, Tex. 77505

Filed May 21, 1981, Ser. No. 266,122

Int. Cl.³ H01L *35/02*

U.S. Cl. 136—242 **9 Claims**





1. A seal for use with a thermocouple assembly having a plurality of sheathed thermocouple leads, said seal comprising:

a plate having a plurality of thermocouple receiving bores therethrough;

tube means fixed in at least a plurality of said thermocouple receiving bores, each of said tube means having one end extending outwardly of said plate; and

sheathed thermocouple leads extending through at least some of said tube means, each of said sheathed thermocouple leads being fixed to said one end of an associated tubes means.

4,376,228

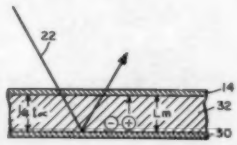
SOLAR CELLS HAVING ULTRATHIN ACTIVE LAYERS

John C. C. Fan, Chestnut Hill, and Carl O. Bozler, Sudbury, both of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Jul. 16, 1979, Ser. No. 57,874

Int. Cl.³ H01L *31/06*

U.S. Cl. 136—255 **16 Claims**



3. A solar cell comprising:

a. an active layer of a semiconductor consisting essentially of silicon produced from an alloy of amorphous silicon and hydrogen in a glow discharge in silane, said layer having a thickness of less than 0.25 μm;

b. a junction for maintaining separation of photogenerated charge carriers;

c. a back surface reflector for said active semiconductor layer, said back surface reflector having a solar spectrum reflectivity of at least about 70%; and,

d. a substrate.

4. A solar cell of claim 3 wherein said junction comprises a Schottky barrier formed between said semiconductor layer and a metal having a thickness at which said metal is transparent to solar radiation.

4,376,229

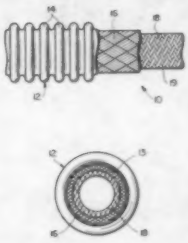
SHIELDED CONDUIT

Frederick E. Maul, Milpitas, and Edward P. Goett, Geyserville, both of Calif., assignors to Raychem Corporation, Menlo Park, Calif.

Filed Sep. 16, 1980, Ser. No. 187,663

Int. Cl.³ H05K *9/00;* **H01B** *7/34*

U.S. Cl. 174—35 R **16 Claims**



1. Flexible electrical shielding conduit comprising:

flexible conduit tubing having an internal cross-section;

a generally tubular flexible electrical shielding means having a predetermined thickness disposed within the conduit tubing; and

axially compressible radially expansible retaining means for forcing the shielding means into contact with the tubing disposed inside the shielding means and in contact therewith, the external cross-section of retaining means being preset in axial compression at least as great as the internal cross-section of the conduit tubing less twice the thickness of the electrical shielding means.

4,376,230

CABLE DUCT

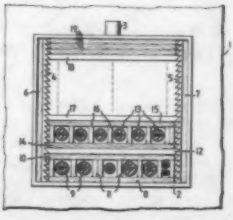
Günther Bargsten, Hamburg, Fed. Rep. of Germany, assignor to Licentia Patent-Verwaltungs-GmbH, Frankfurt am Main, Fed. Rep. of Germany

Filed Jul. 10, 1981, Ser. No. 281,921

Claims priority, application Fed. Rep. of Germany, Jul. 10, 1980, 8018534[U]

Int. Cl.³ H02G *3/22*

U.S. Cl. 174—48 **9 Claims**



1. In a cable duct for leading cables through a wall; said cable duct including a rectangular hollow body having a predetermined length and opposite open ends and an embedding mass filling the hollow body about the cables passing there-

through; the improvement wherein said cables are arranged as at least one cable layer embedded in an absorbent and expandable filler material in the zone of said ends; further comprising support bars arranged within said hollow body along two opposite walls thereof in the zone of said ends; a transverse bar positioned over each said cable layer in the zone of said ends and extending transversely to the length dimension of said hollow body and said support bars; each said transverse bar having ends projecting into respective said support bars.

4,376,231

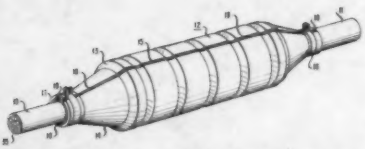
COMMUNICATION CABLE SEALED WITH A RE-ENTERABLE SEALING TAPE

Raffaele A. Sabia, Atlanta, and James L. Williams, Doraville, both of Ga., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Continuation of Ser. No. 111,907, Jan. 14, 1980, abandoned. This application Aug. 21, 1981, Ser. No. 295,006

Int. Cl.³ B32B *9/00, 15/00;* **B65H** *69/02;* **H02G** *15/08*

U.S. Cl. 174—92 **3 Claims**



1. A communications cable comprising two cable ends joined together to form a splice, and an airtight cable splice closure covering the splice and sealed to the two ends of the cable with a sealing cord or tape, with said closure comprising mating portions joined together at a re-enterable and re-sealable seam sealed with said sealing cord or tape, said cord or tape comprising the following ingredients in the approximate amounts indicated:

	Range Parts by Weight	
	Min.	Max.
Acrylic rubber	22	27
Polyisobutylene	7	10.5
Carbon black	5	11
Tricresyl phosphate or chlorinated paraffin	10	14
Nonconductive, fine particle filler	40	50

4,376,232

ELECTRO-ACOUSTIC TRANSDUCER

Erwin Martin, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Mar. 2, 1981, Ser. No. 239,580

Claims priority, application Fed. Rep. of Germany, Feb. 29, 1980, 3007808

Int. Cl.³ H04R *15/00*

U.S. Cl. 179—110 A **3 Claims**

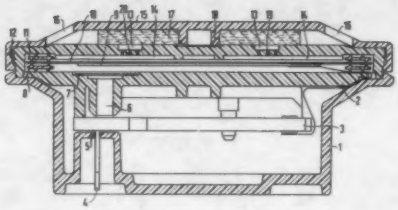
1. An electro-acoustic transducer, comprising:

a transducer plate arranged in a housing and which divides space within the housing into a front chamber and a rear chamber;

a cover or fitting closing off the front chamber and provided with sound openings;

the front chamber containing means for attenuating rises in resonance comprising a baffle plate arranged in the front chamber between the transducer plate and the cover, and wherein the cover and the baffle plate are provided with sound openings, the sound openings of the cover being arranged offset relative to the sound openings of the baffle plate;

means possessing attenuating properties in the region of the baffle plate and which cover the sound openings of the baffle plate;



the sound openings of the baffle plate being formed by a plurality of slots which are narrow in relation to the sound openings of the cover; and

the narrow slots being assembled to form groups and each such group being adjoined by an extending opening or recess in the baffle plate.

4,376,233

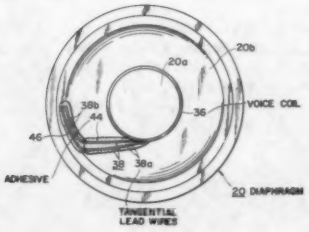
SECURING OF LEAD WIRES TO ELECTRO-ACOUSTIC TRANSDUCERS

Yoshiyuki Kamon, and Yoshihiro Yokoyama, both of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Dec. 18, 1980, Ser. No. 217,817

Int. Cl.³ H04R *1/06, 9/04*

U.S. Cl. 179—115.5 VC **8 Claims**

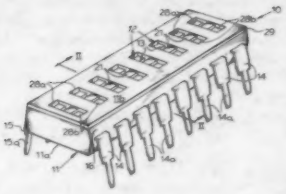


1. An electro-acoustic transducer comprising: a mounting member; a magnetic circuit secured to said mounting member and having an air-gap; a diaphragm having a peripheral portion secured to said mounting member; a cylindrical voice coil secured to said diaphragm and extending into said air gap of said magnetic circuit, said voice coil having lead wires with first ends which are attached to and having first portions which extend from said voice coil in a substantially tangential direction towards the periphery of said diaphragm, said lead wires having second portions bonded to said diaphragm by adhesive, and a pair of electrical terminals attached to said mounting member and second ends of said lead wires connected respectively to said pair of electrical terminals.

4,376,234
DIP SWITCH

James P. Liátaud, 70 Bluff Rd., Cary, Ill. 60013, and David L. Maloney, 435 Valley View, Barrington, Ill. 60010

Filed May 5, 1981, Ser. No. 260,821
Int. Cl.³ H01H 15/00
U.S. Cl. 200—16 R 24 Claims



1. A miniature switch having a plurality of switch sections, comprising:

a rectangular housing made of an insulating material;

a plurality of terminal leads projecting from opposite walls of the housing;

an inside of the housing having a floor portion which for each switch section has aligned first and second exposed contact surfaces thereat which are extensions of respective terminal leads associated with the switch section;

a metal springy bridge-like slide contact for each switch section within the housing and having a substantially flat central portion and downwardly bent and laterally outwardly extending curved portions forming contact projections at opposite ends thereof, a contact projection at one end being in continuous contact with the first contact surface nearest said one end of the slide contact in either of two switch positions and being dimensioned so that a contact projection at the other end selectively contacts the second contact surface in one of the switch positions but not the other;

a post-like projection directly attached at said flat central portion;

a cam means comprising a notch and cooperating cam projection, one of the notch and cam projection being formed on said post-like projection and the other at a ceiling of an interior surface of the housing to mechanically define the two switch positions;

an aperture in the housing for each switch section through which the post-like projection extends and by which the slide contact may be physically positioned; and

the inside of the housing being dimensioned such that a ceiling portion thereof biases the slide contact through said cam means against the contact surfaces at the floor portion.

4,376,235
ELECTRICAL JUNCTION OF HIGH CONDUCTIVITY FOR A CIRCUIT BREAKER OR OTHER ELECTRICAL APPARATUS

Stanislaw A. Milianowicz, Monroeville, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

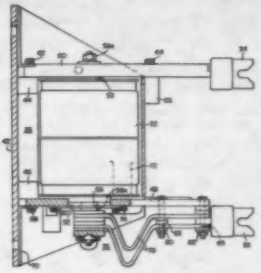
Filed Feb. 12, 1981, Ser. No. 233,723
Int. Cl.³ H01H 9/00
U.S. Cl. 200—50 AA 21 Claims

1. A circuit interrupter system, comprising:

circuit interrupter means including separable contacts one of which is interconnected with an external stem, where said stem has a given cross sectional shape;

an external conductor connected to said external stem, said conductor having a generally flat planar portion with an opening therein which is generally of the same cross-sectional shape as said stem but slightly smaller in cross sectional area, the periphery of said opening having a slit therein which provides a peripheral tab which is offset from the plane of said flat planar portion when said opening is initially disposed around said stem to thus initially accommodate for the difference in area; and

compression means disposed upon said stem in a disposition for causing said tab to substantially realign with said plane

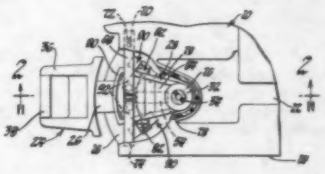


of said planar portion, the material of said tab assuming a flowed state in the region of the interface between said tab and said stem after compression to accommodate for the difference in area.

4,376,236
MULTIPLE FUNCTION SWITCH ASSEMBLY

Donald A. Long, and Thomas R. Sowash, both of Anderson, Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed Jun. 8, 1981, Ser. No. 271,685
Int. Cl.³ H01H 3/12, 9/00
U.S. Cl. 200—61.27 3 Claims



1. A multiple function switch for controlling vehicle turn signals and another vehicle function comprising

support means including a mounting surface,

turn signal switch means carried by the support means,

second switch means mounted on the mounting surface, the second switch means being actuable by a force transverse to the mounting surface,

a manually controlled handle, an actuator mounted to the handle for control by the handle to form a lever assembly, the actuator being pivotally mounted to the support means for rocking movement in a path generally parallel to the mounting surface and about a first axis transverse to the mounting surface, the actuator having a neutral position and being operatively coupled to the turn signal switch means for selective operation thereof upon rocking movement on either side of the neutral position,

means pivotally mounting the handle to the actuator for rocking movement about a second axis transverse to the first axis, the handle having abutment means movable in an arcuate path transverse to the mounting surface between a neutral position and an actuated position in operating engagement with the second switch means to apply actuating force thereto,

a ramp surface on the handle disposed at an angle to the mounting surface, and

resilient means mounted on the support means and slidably

bearing on the ramp surface of the handle for providing a force transverse to the mounting surface for urging the handle toward its neutral position and a camming action for urging the actuator toward its neutral position, whereby when the lever assembly is moved to actuate the turn signal switch means or the second switch means a return force is provided by the resilient means.

4,376,237

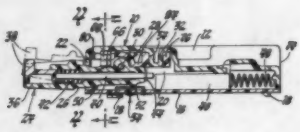
VEHICLE TURN SIGNAL SWITCH ACTUATOR

Donald A. Long, Anderson, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Jun. 8, 1981, Ser. No. 271,691

Int. Cl.³ H01H *3/12, 9/00*

U.S. Cl. 200—61.27 **3 Claims**



1. A turn signal switch assembly comprising

a support having a mounting surface,

a manually operable turn signal lever pivotally mounted on the support for rocking movement in a path generally parallel to the mounting surface,

right and left turn signal switches on the mounting surface for selective operation by the lever upon rocking movement thereof in either direction, an element of each switch being movable generally perpendicular to the path of the lever for switch actuation, and

means for translating the lever motion to a switch actuating motion comprising yieldable leaf spring means secured to the support and lying in part between the lever and each switch, the spring means having for each switch a portion extending into the path of the lever so that movement of the lever against the portion causes deflection of the spring means against the said element in a direction to actuate the switch.

4,376,238

ELECTRICAL DEVICES

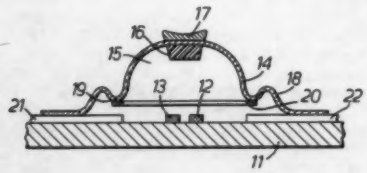
Sidney H. Martin, Mellor, England, assignor to International Computers Limited, London, England

Filed Mar. 11, 1981, Ser. No. 242,700

Claims priority, application United Kingdom, Mar. 12, 1980, 8008279

Int. Cl.³ H01H *13/52*

U.S. Cl. 200—159 B **2 Claims**



1. A switch assembly including a base member, at least one pair of conductors provided upon the base member and which are to be electrically connected, an elastomeric membrane extending over the base member, the membrane having at least one portion belled outwardly away from the base member to define a cavity beneath the membrane and being so positioned as to overly at least two separate pairs of conductors to be electrically connected, each said belled out portion of the membrane having a circumscribing region of such characteristics that on exerting pressure on the portion to collapse said portion towards the base member, said circumscribing region is first to collapse, each said portion also including first and second conductive contactor elements positioned as to be electrically connectable with the first and second pairs of the electrical conductor pairs and so located relative to the circumscribing region that on exerting pressure upon the membrane to collapse said portion towards the base member, said first and second conductive contactor contact elements are caused successively to contact the associated first and second pairs of conductors.

4,376,239

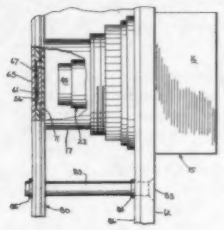
INDUSTRIAL MEMBRANE SWITCH

Eric L. Long, Northbrook, Ill.; Gary C. Fillus, South Milwaukee, and Kenneth L. Paape, Mequon, both of Wis., assignors to Allen-Bradley Company, Milwaukee, Wis.

Continuation of Ser. No. 193,470, Oct. 3, 1980, abandoned. This application Apr. 30, 1982, Ser. No. 373,669

Int. Cl.³ H01H *13/06, 13/52, 13/70*

U.S. Cl. 200—159 B **5 Claims**



1. An electrical switch which comprises:

an operator housing with a front end, a rear end and an opening therethrough from a housing entrance at the front end to a housing exit at the rear end;

an operator disposed in the opening in the operator housing, the operator extending from one end at the housing entrance to a distal end spaced inwardly from the housing exit, the operator being mounted for movement within the operator housing such that the distal end of the operator is movable toward the housing exit to actuate the switch;

a resilient pad mounted on the distal end of the operator;

a sealed-contact unit that extends across the exit of the housing and includes

a substrate of insulating material,

a pair of contact elements spaced apart in the direction of operator travel to provide a switch gap, the first contact element being supported by the substrate,

a flexible membrane of insulating material on which the second contact element is disposed on its underside in a position opposite the conductive element on the substrate,

spacing means disposed between and secured to the flexible membrane and the substrate for surrounding and sealing the contact elements within a contact chamber that is formed around the switch gap,

wherein the contact unit further includes a contact housing that closes over the exit of the operator housing and has a cavity in which the substrate, the flexible membrane and the spacing means are disposed to enclose the contact elements within the contact housing; and

wherein the switch is actuated through an initial movement of the operator towards the housing exit, and the further movement of the pad of resilient material against the membrane until the switch gap is closed.

4. An array of switches for installation in a control panel or other supporting structure, the array comprising:

a circuit board assembly including a circuit board with an array of pairs of contact termination areas, a flexible membrane disposed over the circuit board and carrying an array of shorting patches, each of which is disposed on an inner side of the flexible membrane in opposition to a corresponding pair of termination areas, spacing means between the circuit board and the flexible membrane enclosing each shorting patch and a respective pair of termination areas within a contact chamber in which a switch gap is provided between the shorting patch and the termination areas, and a plurality of switch terminals along an edge of the circuit board that are electrically connected through the circuit paths to the contact termination areas;

a plurality of operator assemblies adapted to be mounted in a control panel or other supporting structure that has an array of apertures spaced for one-to-one correspondence with the shorting patches on the circuit board, each operator assembly including

an operator housing with a forward portion that is open at its front to provide a housing entrance and with a barrel portion that extends rearwardly from the forward portion and is open at its rear to provide a housing exit, the forward portion of the operator housing extending radially outward of the barrel portion to control the depth of insertion of the operator housing into the control panel or other supporting structure,

a reciprocally movable, manually engageable operator slidably contained within and insertable into the housing, the operator having a head portion closing the entrance of the housing and a stem portion extending rearwardly from the head portion to a distal end of the operator, the operator being mounted for movement within the operator housing and the distal end of the operator being spaced from, and movable to, the housing exit, and

a pad of resilient material mounted on the distal end of the operator to engage the membrane and close one of the switch gaps; and

means for retaining each of the operator assemblies in an inserted portion in the control panel or other supporting structure with the barrel portion of each operator assembly extending to the same depth behind the control panel or other supporting structure as the barrel portions of the other operator assemblies in the array; and

means for mounting the circuit board assembly behind the control panel or other supporting structure to abut the rear of the operator housings and close over the housing exits to form an array of sealed-contact switches.

4,376,240

POWER TOOL

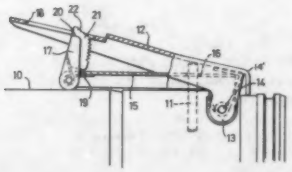
Gerald W. Stuart, Rustington, England, assignor to Desoutter Limited, Colindale, England

Filed Jan. 30, 1981, Ser. No. 229,856

Claims priority, application United Kingdom, Feb. 19, 1980, 8005606

Int. Cl.³ H01H *3/20*

U.S. Cl. 200—322 **9 Claims**



1. A control lever for a power tool having a body and a power drive means connected to the body, comprising, an arm pivotally connected adjacent one end to the body, an on/off switch for power drive means operably mounted on the body and operable by said arm so that when said arm is in a first position the switch is 'off', said arm being pivotally movable to a second position in which the switch is 'on', a latch member mounted at one end for pivotal movement relative to the body, spring means biasing said latch member towards a first position, stop means on the other end of said latch member which when said latch member is in its first position releasably engages said arm when said arm is in its first position to prevent movement of the arm to its second position, said latch member being pivotally movable towards a second position, and thumb engageable means adjacent said other end of said latch member for moving said latch member toward its second position to release said latch member from engagement with said arm to allow said arm to be moved towards its second position to thereby move said on/off switch to the 'on' position, and means to bias said arm towards its first position comprising a camming surface adjacent said stop means operably engaging said arm so that said spring means biases both said latch member and said arm.

4,376,241

EROSIVE CUTTING MACHINE FOR THE FINAL MACHINING OF PUNCHING AND CUTTING TOOLS

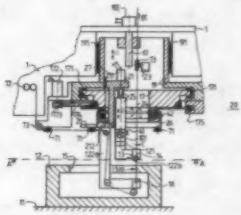
Paul Fricker, Locarno, Switzerland, assignor to A.G. für Industrielle Elektronik AGIE, Losone, Switzerland

PCT No. PCT/CH79/00067, § 371 Date May 16, 1980, § 102(e) Date May 16, 1980, PCT Pub. No. WO80/02394, PCT Pub. Date Nov. 13, 1980

PCT Filed May 9, 1979, Ser. No. 253,937

Int. Cl.³ B23P *1/08*

U.S. Cl. 219—69 W **17 Claims**



1. Erosive cutting machine for the final machining of prepared closed inner shapes and closed outer shapes of a workpiece (12) having

a workpiece holder (11) to retain the workpiece;

a filamentary or strip electrode (14);

and guidance means, including upper and lower guide elements (13, 18), for guiding the electrode through a working or cutting zone (1318)

comprising

a motor rotatable rotary mechanism (20) having an axis of rotation (24) which has a common reference point on the axis (23) of the electrode (14);

a first cross slide (41) which is controllably driven for controlling any desired cutting cone and which carries an upper arm (122*b*);

a second cross slide (42) which is controllably driven and positioning the wire guidance means (13, 18) on said reference point;

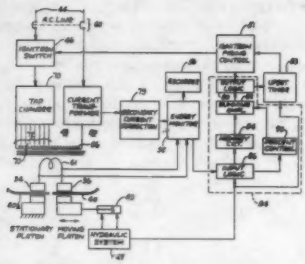
and means (27) for continuous adjustment (Z1) of the distance between the upper and lower guidance elements (13, 18).

4,376,242

FLASH WELDING APPARATUS AND METHOD

Grier E. Buff, Gadsden, and Talmadge V. Phillips, Ragland, both of Ala., assignors to Republic Steel Corporation, Cleveland, Ohio

Continuation of Ser. No. 863,222, Dec. 22, 1977, abandoned, which is a continuation of Ser. No. 653,837, Jan. 30, 1976, Pat. No. 4,101,753. This application Jan. 30, 1980, Ser. No. 117,031
The portion of the term of this patent subsequent to Jul. 18, 1995, has been disclaimed.
Int. Cl.³ B23K *11/04*
U.S. Cl. 219—97 29 Claims



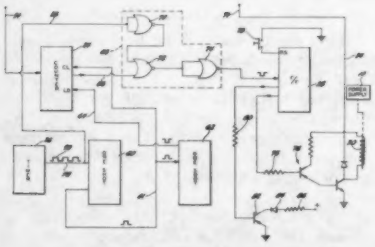
1. A welder comprising:
(a) apparatus for applying heating energy to effect welds between workpieces in a plurality of steps;
(b) sensing apparatus for producing a signal representing the amount of heating energy applied in one of said steps; and
(c) control apparatus responsive to the sensing apparatus for controlling the amount of heating energy applied in another of said steps as a function of the energy applied in said one step, said function having a positive first derivative over a range of energy sensed in said one step.

4,376,243

ARC DETECTOR FOR ELECTRIC ROD FURNACE

Charles F. Renn, and William J. Koeller, both of Defiance, Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Jan. 26, 1981, Ser. No. 228,293
Int. Cl.³ H05B *1/02*
U.S. Cl. 219—514 3 Claims



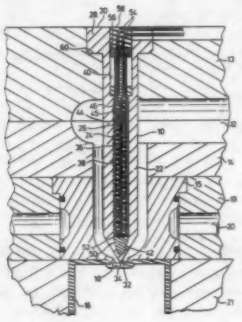
1. Apparatus for detecting repetitive arcing in an electric furnace supplied by an electrical direct current source wherein an electrical current surge accompanies each arc event comprising
detector means responsive to surges in the direct current flow for producing an arc pulse each time the current change exceeds a predetermined rate,
a counter preset for a given count and connected to the detector means to count each arc pulse for producing a counter signal when the counter reaches the said given count,
timer means for producing a regular series of reset pulses defining predetermined sample periods, the reset pulses being coupled to the counter to reset the counter at the occurrence of each reset pulse so that the counter is able to reach the given count only when the required number of arc pulses occurs within a single sample period, and
output circuitry for producing an output when the counter produces a counter signal.

4,376,244

INJECTION MOLDING HEATED PROBE

Jobst U. Gellert, 7A Prince St., Glen Williams, Ontario, Canada

Filed May 11, 1981, Ser. No. 262,302
Claims priority, application Canada, May 8, 1981, 377228
Int. Cl.³ H05B *3/06*
U.S. Cl. 219—523 5 Claims



1. An integral elongated heated probe to extend centrally into a portion of a hot runner passage wherein pressurized melt flows longitudinally past the probe to a gate leading to a cavity, the elongated heated probe comprising:
(a) an elongated hollow outer body having first and second ends, the body member defining a well extending from the first end to an enclosed pointed tip extending in the direction of flow at the second end, the well having a generally cylindrical inner wall, but ending at a generally conical portion adjacent the tip at the second end, the first end having means for locating the heated probe in position extending into the hot runner passage;
(b) an elongated inner heater member seated in the well in the outer body, the heater member having an electrical heating element connected to external lead means, the heating element extending through a heat transfer material in a generally cylindrical outer casing, the outer casing having a slightly smaller outside diameter than the inside diameter of the inner wall of the well in the outer body thereby forming a space therebetween; and
(c) a highly conductive material substantially filling the conical portion of the well adjacent the tip of the outer body and the space between the outer casing of the heater member and the inner wall of the well.

4,376,245

ELECTRICAL HEATING ELEMENT

Nils Lindskog; Ingvar Oderstig, and Lars Berg, all of Hallstahammar, Sweden, assignors to Bulten-Kanthal AB, Hallstahammar, Sweden

Filed Jan. 28, 1981, Ser. No. 229,609
Claims priority, application Sweden, Feb. 6, 1980, 8000970
Int. Cl.³ H05B *3/10*
U.S. Cl. 219—552 4 Claims

1. An electrical heating element having an improved durability at a high temperature comprising:

(a) a resistor element in the form of an elongated wire of an alloy which is resistant to nitriding in an oxygen-deficient, nitrogen-containing atmosphere, said resistor element comprising 12–25 percent by weight Cr, 3–6 percent by weight Al, 0.01–1 percent by weight of at least one member of the group consisting of Y, Hf, Sc, and the lanthanides, a minor amount of at least one member selected from the group consisting of Si, Mn, and Co, and the balance Fe;

(b) an insulating material comprising MgO in which said resistor element is embedded; and

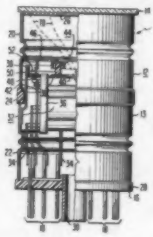
(c) an outer metallic casing surrounding said insulating material and said resistor element embedded therein.

4,376,246

SHIELDED FOCUSING ELECTRODE ASSEMBLY FOR A PHOTOMULTIPLIER TUBE

Gilbert N. Butterwick, Leola, Pa., assignor to RCA Corporation, New York, N.Y.

Filed Jan. 22, 1981, Ser. No. 227,342
Int. Cl.³ H01J 39/00
U.S. Cl. 250—207 **8 Claims**



1. In a photomultiplier tube of the type including an evacuated envelope, a faceplate having an interior and an exterior surface, said faceplate extending across one end of said envelope, a stem section sealing the other end of said envelope, a photoemissive cathode disposed on the interior surface of said faceplate, said cathode providing photoelectrons in response to radiation incident thereon, an electron multiplier support electrode spaced from said faceplate, said support electrode having a centrally located aperture extending therethrough, a focusing electrode assembly disposed about said aperture of said support electrode, at least one antimony evaporator disposed adjacent to said focusing assembly for evaporating antimony onto the faceplate during the formation of said photoemissive cathode, an electron multiplier attached to said support electrode, and an anode within said electron multiplier, the improvement wherein said focusing electrode assembly comprises:

an insulating member having a generally tubular body with an exterior surface and an interior surface and having a proximal end and a distal end, said proximal end being adjacent to said support electrode, and

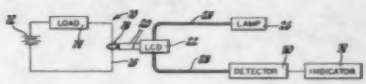
means for focusing said photoelectrons from said photocathode into said electron multiplier and for shielding both said interior surface of said insulating member from photoelectrons impinging thereon and said exterior surface of said member from antimony evaporated during the formation of said photoemissive cathode.

4,376,247

REMOTE CURRENT SENSOR

David L. Humphrey, Warren, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Feb. 26, 1981, Ser. No. 238,377
Int. Cl.³ G01R 31/00
U.S. Cl. 250—227 **4 Claims**



1. A remote current sensor for detecting the change of current flow in a conductor comprising

a current transformer coupled to a current-carrying conductor for generating a voltage corresponding to change of current flow,

a liquid crystal device electrically connected to the transformer and having an optical characteristic variable in response to the generated voltage, and

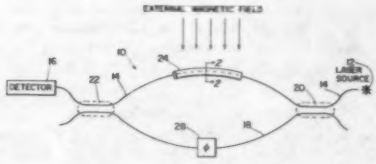
optical readout means coupling radiant energy to the liquid crystal device for modulation thereby for producing a signal corresponding to the change of current flow.

4,376,248

FIBER OPTICAL MAGNETIC FIELD SENSOR USING MAGNETOSTRICTIVE MATERIAL

Thomas G. Giallorenzi, Springfield, and George H. Sigel, Jr., Great Falls, both of Va., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 6, 1981, Ser. No. 241,290
Int. Cl.³ G02B 5/14
U.S. Cl. 250—227 **17 Claims**



1. A sensing arm of an interferometer for detecting a magnetic field comprising:

a length of optical fiber having a single mode optical core surrounded by cladding;

a length of magnetostrictive material disposed in space apart coextensive adjacency with the optical fiber;

means between and adhering to each the optical fiber and magnetostrictive material for bonding them together and maintaining their spacing substantially throughout their coextensive lengths;

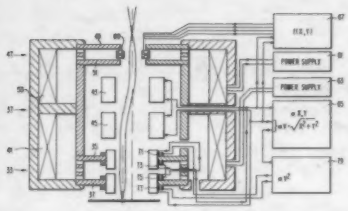
whereby the magnetostrictive material in the presence of a magnetic field undergoes longitudinal dimension changes related to the strength of the magnetic field to strain the optical fiber and change its optical path length to induce strain related phase shifts in light propagating therethrough which is detectable by interferometry;

said bonding means having a coefficient of thermal expansion substantially equal to that of the optical fiber and being slightly resilient thereby permitting limited bending of the magnetostrictive material without causing distortions of the surface of the optical fiber for minimizing microbending losses therein.

4,376,249
VARIABLE AXIS ELECTRON BEAM PROJECTION SYSTEM

Hans C. Pfeiffer, Ridgefield, Conn.; Guenther O. Langner, Hopewell Junction, and Maris A. Sturans, Bedford, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 6, 1980, Ser. No. 204,427
Int. Cl.³ H01J *3/20*
U.S. Cl. 250—396 ML **14 Claims**



1. An electron beam projection system having a projection lens arranged so that upon predeflection of the electron beam the electron optical axis of the lens shifts to be coincident with said deflected beam comprising

electron beam producing means for producing an electron beam,

deflection means for deflecting said beam,

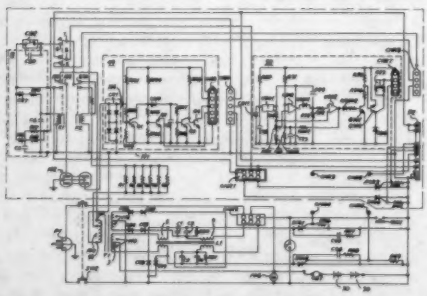
magnetic projection lens means having rotational symmetry for focusing said deflected beam;

and a pair of magnetic compensation yoke means positioned within the bore of said lens means, said pair of compensation yoke means having coil dimensions such that, in combination, they produce a magnetic compensation field proportional to the first derivative of the axial magnetic field strength distribution curve of said lens means and cause the electron optical axis of said lens means to shift to the position of said deflected beam, so that said electron beam remains coincident with said shifted electron optical axis and lands perpendicular to a target.

4,376,250
PORTABLE POWER SOURCE

James W. Baker, Jr., Seattle; Paul W. Hodge, Bothell, and Franklin R. Schneider, Seattle, all of Wash., assignors to Dynamote Corporation, Seattle, Wash.

Filed Dec. 26, 1979, Ser. No. 106,675
Int. Cl.³ H02M *7/515*
U.S. Cl. 307—150 **22 Claims**



1. An apparatus providing a source of alternating current power for power devices comprising:

(a) a frame member;

(b) a plurality of ground engaging wheels for transporting said frame member over the ground;

(c) DC storage means carried on said frame member, said DC storage means having positive and negative outputs;

(d) a transformer means having a low voltage center tapped winding, a line voltage winding, and a high voltage winding, wherein said low voltage center tapped winding is interconnected with the positive output of said DC storage means and wherein said line voltage winding is operable to produce an AC output voltage suitable for powering devices;

(e) first and second controllable rectifier means operably interconnected with both said high voltage winding and said low voltage center tapped winding;

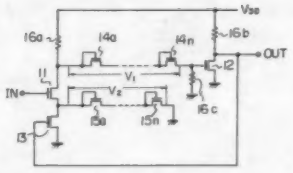
(f) oscillatory circuit means for alternately activating said first and second rectifier means to provide first and second conduction paths for the power in said DC storage means through opposite halves of said transformer means low voltage center tapped winding; and

(g) means for alternately terminating the operation of said first and second rectifier means by producing a reverse voltage in series with the first and second conduction paths extending between said DC storage means and the opposite halves of said transformer low voltage center tapped winding.

4,376,251
WAVEFORM SHAPING CIRCUIT

Kazuyuki Kobayashi, and Tsutomu Kakuya, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 72,459, Sep. 5, 1979, abandoned. This application Dec. 23, 1981, Ser. No. 333,654
Claims priority, application Japan, Sep. 8, 1978, 53-123592[U]
Int. Cl.³ H03K *5/153, 3/295*
U.S. Cl. 307—268 **6 Claims**



1. A waveform shaping circuit which shapes an input signal into an output signal having a rectangular waveform, comprising:

first, second and third MOS transistors respectively having first, second and third terminals;

first and second resistance elements connected between said first terminals of said first and second MOS transistors, respectively, and a supply voltage terminal;

said second terminal of said first MOS transistor being connected to an input terminal of said circuit for receiving the input signal and said third terminal thereof being connected to said first terminal of said third MOS transistor;

said third terminal of said third MOS transistor being connected to ground;

said first terminal of said second MOS transistor being connected to an output terminal for supplying the output signal of said circuit and further being connected to said second terminal of said third MOS transistor to provide a feedback signal thereto;

impedance means connected between said first terminal of said first MOS transistor and said second terminal of said second MOS transistor and comprising a first plurality of series-connected MOS transistors, each said MOS transistor of said first plurality having a shorted connection between said first and second terminals thereof;

resistance means connected between said second terminal of said second MOS transistor and ground; and

reference voltage source means connected between the common connection of said third terminal of said first MOS transistor and said first terminal of said third MOS transistor and ground and comprising a second plurality of series-connected MOS transistors, each thereof having a shorted connection between said first and third terminals thereof.

4,376,252

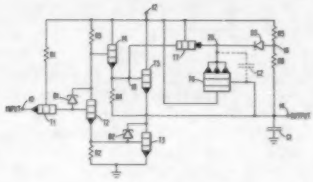
BOOTSTRAPPED DRIVER CIRCUIT

Charles J. Masenas, Jr., Jericho, Vt., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 25, 1980, Ser. No. 181,318

Int. Cl.³ H03K *19/01, 17/04, 17/12, 19/088*

U.S. Cl. 307—482 21 Claims



1. A driver circuit comprising;

a pull up device having a control gate connected between a voltage supply source and an output terminal, and

a series circuit including a charge source and switching means connected between said output terminal and the control gate of said pull up device, said switching means being responsive to the voltage at said output terminal for isolating said charge source from the control gate of said pull up device during a first period of time and for directing charge from said charge source into said pull up device during a second period of time.

4,376,253

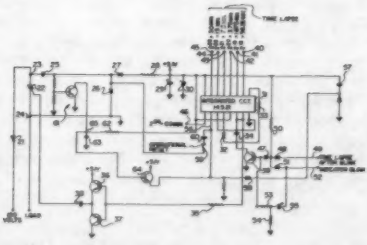
TIMED SWITCH FOR AN AC LOAD

Alan W. Levy, Agincourt; Attila J. Szanto, Ottawa, and Peter C. Wheeler, Embrun, all of Canada, assignors to Canadian Patents & Dev. Limited, Ottawa, Canada

Filed Sep. 19, 1980, Ser. No. 188,949

Int. Cl.³ H03K *5/159, 19/21, 17/60*

U.S. Cl. 307—590 9 Claims



1. A timed AC switch comprising:

manual switch means having an on and an off position;

bidirectional semiconductor switch means connected in series with the manual switch means for connection in series with an AC source and a load;

oscillator means coupled to the bidirectional switch means having a frequency greater than the AC source for controlling the conduction of the switch means;

timing means for providing a different timed output signal on each of a number of output leads; and

inhibit circuit means selectively coupled to at least one of the timing means output leads to inhibit the oscillator means at the preselected time.

4,376,254

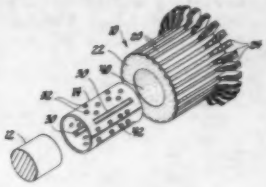
ANNULAR MOLDED ARTICLE SECURED TO A SHAFT

John V. Hellmann, Anderson, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Jun. 10, 1981, Ser. No. 272,252

Int. Cl.³ H02K *13/04*

U.S. Cl. 310—235 3 Claims



1. An electric motor armature comprising: a current collector having metallic conductor means supported on a hub of insulating molded material with a circular bore extending therethrough, a rolled sheet metal bushing disposed within said circular bore, said bushing having a plurality of pointed barbs extending from the outer periphery thereof and a plurality of ribs extending from the inner periphery thereof, and an armature shaft press-fitted into said bushing, the relative diameters of said bore, bushing and shaft being such that the insertion of said shaft into said bushing operates to deform said ribs to thereby nonrotatably secure said bushing to said shaft and to embed said pointed barbs into the molded material of said hub to thereby nonrotatably secure said bushing to said molded material whereby said current collector is nonrotatably secured to said shaft.

4,376,255

METHOD FOR PULSE TRIGGERING OF A PIEZO-ELECTRIC SOUND-TRANSMITTING TRANSDUCER

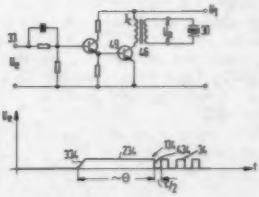
Peter Kleinschmidt, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Feb. 18, 1981, Ser. No. 235,653

Claims priority, application Fed. Rep. of Germany, Mar. 14, 1980, 3009975

Int. Cl.³ H01L *41/08*

U.S. Cl. 310—317 8 Claims



1. A method of exciting a piezoelectric transducer into sustained oscillation, comprising the steps of:

prior to applying periodic voltage pulses having a period τ, applying a single d.c. voltage pulse to the piezoelectric transducer with a leading edge effective to deflect the

transducer to a predetermined deflection in one direction which is approximately equal to the maximum deflection during sustained oscillation and an abrupt trailing edge located within an interval $\Delta t < \tau/2$ effective to deflect the piezoelectric transducer in the opposite direction; and then applying the periodic voltage pulses at the time of maximum deflection in the opposite direction to place and maintain the piezoelectric transducer in sustained oscillation.

4,376,256

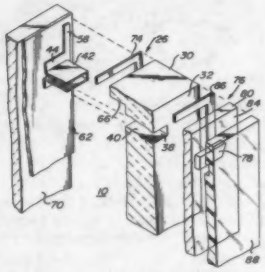
SEGMENT DISPLAY SYSTEM

Jacques M. Hanlet, Loxahatchee, Fla., assignor to Alpha-Omega Development, Inc., Loxahatchee, Fla.

Continuation-in-part of Ser. No. 121,918, Mar. 5, 1980, Pat. No. 4,341,976. This application Jan. 29, 1981, Ser. No. 229,515

Int. Cl.³ H01J 1/20, 61/09, 61/42

U.S. Cl. 313—210 35 Claims



1. A segment display system comprising:

(a) cathode means for producing energy in the ultraviolet bandwidth of the electromagnetic spectrum from the ionization of metal atoms, said cathode means defining a cathode plate member having a plurality of discrete slots formed therethrough, said cathode plate member having opposing first and second surfaces, each of said through slots defining a sidewall having a metallic coating formed thereon;

(b) anode means fixedly secured to said cathode plate member and displaced from said cathode plate member second surface for forming an internal chamber therebetween; and,

(c) display panel means secured to said cathode plate member first surface, said display panel means having formed thereon a plurality of fluorescent material coatings in registration with said cathode plate member through slots.

4,376,257

ELECTRON GUN STRUCTURES FOR USE IN IN-LINE TYPE COLOR PICTURE TUBES

Masahiro Miyazaki, and Hisao Nakamura, both of Mobara, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

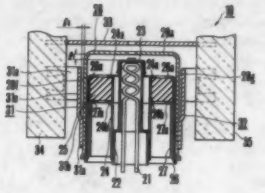
Filed Sep. 25, 1980, Ser. No. 190,727

Claims priority, application Japan, Jan. 23, 1980, 55/5799[U]

Int. Cl.³ H01J 29/02, 29/82

U.S. Cl. 313—417 6 Claims

1. An electron gun structure for use in an in-line type color picture tube comprising a center gun, and a pair of side guns disposed on both sides of sid center gun; each of said guns including a cathode electrode, a control electrode, and other electrodes; said control electrodes of said guns being formed in a common control electrode taking the form of a cup with a top having openings transmitting electron beams; said common control electrode being supported by supporting members; one end of each supporting member being secured to a side wall of said common control electrode at a point near lower opening of said common control electrode; each supporting member including a portion extending from said portion toward said top with a gap between said portion and the side wall of said control electrode, and a leg secured to an insulating bar so that said control electrode is supported by said insulating bar at a



predetermined positional relation with respect to other electrode of each gun; each of said cathode electrodes supported by an insulating member so as to face said top openings of said common control electrode with a predetermined spacing.

4,376,258

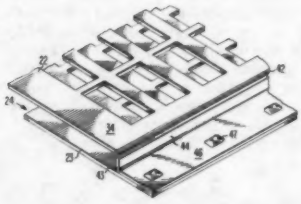
SHIELDED BEAM GUIDE STRUCTURE FOR A FLAT PANEL DISPLAY DEVICE AND METHOD OF MAKING SAME

Thomas L. Glock, Allentown, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Apr. 16, 1981, Ser. No. 254,648

Int. Cl.³ H01J 29/06, 9/14

U.S. Cl. 313—422 9 Claims



1. An electron beam guide assembly for a flat panel display device comprising:

a substantially flat guide mesh including a plurality of apertures arranged in columns longitudinally along said mesh and transversely across said mesh; and

a shaped guide mesh having a substantially planar surface and including a plurality of apertures arranged in columns longitudinally along said planar surface and in rows transversely across said planar surface, said shaped guide mesh being longitudinally bent to include sides extending angularly away from said planar surface, said sides being bent to include flanges extending from said sides in a plane substantially parallel to and displaced from said planar surface said shaped guide mesh being attached to said flat guide mesh along said flanges to form a beam guide assembly having continuously shielded longitudinal sides.

4,376,259

HIGH INTENSITY DISCHARGE LAMP INCLUDING ARC EXTINGUISHING MEANS

Harold L. Rothwell, Jr., Rowley, and Robert S. White, Jr., Beverly, both of Mass., assignors to GTE Products Corporation, Stamford, Conn.

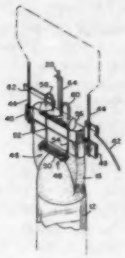
Filed Mar. 9, 1981, Ser. No. 242,074

Int. Cl.³ H01J 7/44

U.S. Cl. 315—074 3 Claims

1. A high intensity discharge lamp comprising: an arc dis-

charge tube operating within a given environment; an oxidizable, end-of-life device connected in series with the electrodes of said arc discharge tube; and means for providing said given environment with a residual oxygen pressure of about 0.1 torr whereby long operation of said lamp will cause slow, but



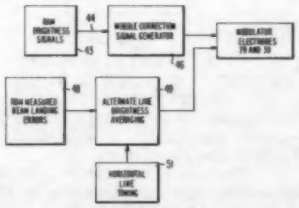
continuous oxidation of said end-of-life device to eventually achieve rupture of said end-of-life device at a predetermined time, thereby opening the circuit and disabling said lamp, said predetermined time being approximately equal to the life expectancy of said lamp.

4,376,260

SYSTEM FOR COMPENSATING FOR INTENSITY VARIATIONS AND BEAM LANDING ERRORS IN FLAT PANEL DISPLAY DEVICES

John P. Russell, Pennington, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Oct. 14, 1981, Ser. No. 311,258
Int. Cl.³ H01J 29/70, 29/72
U.S. Cl. 315—366 **5 Claims**



1. A system for compensating for intensity variations and electron beam landing errors in a flat panel display device having at least one beam guide for propagating said electron beam and a modulator for varying said electron beam in accordance with video information comprising:

first means for applying a continuously variable signal to said modulator to compensate for intensity variations of said electron beams;

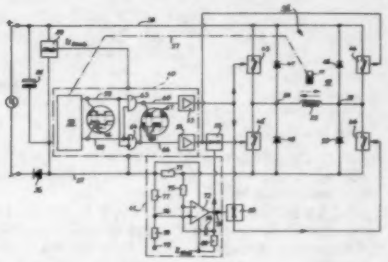
second means for applying an averaged position signal to said modulator to compensate for landing errors of said electron beam.

4,376,261

TWO-PULSE BRUSHLESS D.C. MOTOR

Johann von der Heide, Mönchweiler; Rolf Müller, and Benno Doemen, both of St. Georgen, all of Fed. Rep. of Germany, assignors to Papst-Motoren KG, St. Georgen, Fed. Rep. of Germany

Filed Nov. 25, 1980, Ser. No. 210,409
Claims priority, application Switzerland, Nov. 30, 1979, 10772/79
Int. Cl.³ H02K 29/02
U.S. Cl. 318—254 **17 Claims**



1. A brushless d.c. motor having a permanent magnet rotor (11), a stator, conductor means (25) wound on said stator for energizing the stator by pulses of current, and rotor position sensing means (85) for controlling said current pulses so that in operation of said motor two current pulses are provided to said conductor means (25) for every 360° el. of rotation of said rotor, said sensing means (85) having an output providing an electrical signal having two output values between which it makes substantially instantaneous transitions at instants determined by rotor position, said motor further comprising, in accordance with the invention:

means (96,97;139,142) for subjecting said output signal (u_{85}) of said sensing means to phase reversal and delay and delivering a correspondingly modified signal at an output;

a pair of logic elements (90,98;145,146) to the respective inputs of which are applied said output signal of said sensing means and the output of said phase reversal and delay means, for producing logic stage output signals (132,133) at each of two outputs only when between said inputs of said logic elements there is a voltage difference of a predetermined polarity exceeding a predetermined minimum in magnitude, the logic stage output signals of one of said two outputs being separated in time from the logic stage output signals of the other of said two outputs by time gaps, and

means (104,105, etc.) responsive to said respective logic stage output signals for controlling the provision of current pulses to said conductor means (25) wound on said stator.

4,376,262

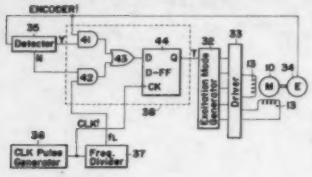
METHOD AND APPARATUS FOR CONTROLLING A DIGITAL CONTROLLED BRUSHLESS MOTOR

Masanao Okuda, Kosai, and Wataru Oishi, Hamamatsu, both of Japan, assignors to Fuji Electrochemical Co., Ltd., Tokyo, Japan

Filed Feb. 26, 1981, Ser. No. 238,485
Claims priority, application Japan, Feb. 29, 1980, 55-24709
Int. Cl.³ H02K 29/04
U.S. Cl. 318—696 **8 Claims**

1. Method of controlling a pulse controlled brushless motor which has an electric circuit means for producing a clock pulse in a slewing region and a signal of a pull-in pulse rate, and a peripheral circuit for exciting said motor, said motor being driven at a constant rotational speed in a region of slewing pulse rate, comprising the steps of:

a. encoding a rotational condition of a rotor of the motor by means of a rotary encoder associated with the motor thereby to produce an encoded electric signal having a frequency proportional to the speed of the motor,
b. detecting the encoded electric signal to determine whether said rotor is being rotated or not,
c. synchronizing the signal of pull-in pulse rate with the clock pulse when said rotor is not being rotated, and

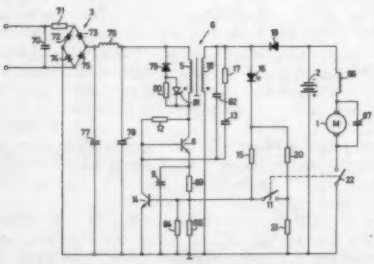


synchronizing said encoded electric signal with said clock pulse when said rotor is being rotated, to thereby form an input pulse train, and
d. supplying said input pulse train to said peripheral circuit, whereby when a rotational speed of said rotor does not correspond to a frequency of said clock pulse, said input pulse train is formed corresponding to any one of said signal of pull-in pulse rate and said encoded electric signal.

4,376,263
BATTERY CHARGING CIRCUIT

Kurt Pittroff, Hofheim; Gerhard Lang, Weilrod, and Gerhard Schwarz, Altena, all of Fed. Rep. of Germany, assignors to Braun Aktiengesellschaft, Kronberg, Fed. Rep. of Germany

Filed Jan. 27, 1981, Ser. No. 228,867
Claims priority, application European Pat. Off., Nov. 6, 1980, 80106836
Int. Cl.³ H02J 7/10
U.S. Cl. 320—32 **4 Claims**

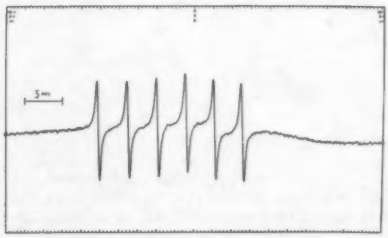


1. A circuit for charging a battery of an appliance from a power source having a power source voltage, comprising:
an electromagnetic transformer having a primary coil with first and second terminals and a secondary coil;
rectifying means electrically connected between said secondary coil and said battery;
an electrical series circuit including a first electronic switch having a first control lead, a first resistor and said primary coil, said series circuit being electrically connected in parallel with said power source;
first capacitor means electrically connected between said secondary coil and said first control lead for substantially reducing reverse voltage pulses transmitted to said first control lead;
a second electronic switch having a second control lead, said second electronic switch being electrically connected to said first control lead;
control signal supply means for simultaneously supplying said second control lead with a first electrical control signal proportional to the current flowing through said primary coil and a second electrical control signal proportional to said power source voltage;
a first diode having a first anode and a first cathode, said first diode being electrically connected in parallel with said primary coil with said first cathode being electrically connected to said first terminal of said primary coil; and
a Zener diode electrically connected in series with said first diode and in parallel with said primary coil, and having a second anode and a second cathode, said second anode being electrically connected to said first anode and said second cathode being electrically connected to said second terminal of said primary coil.

4,376,264
METHOD OF CHECKING THE AUTHENTICITY OF PAPERS AND PHYSICALLY IDENTIFIABLE PAPER FOR USE IN SAID METHOD

Hendrik D. Dokter, Ugchelen; Roelof Hildering, Frederikslaan, and Adrianus Mackor, Hollandsche Rading, all of Netherlands, assignors to Papierfabrieken Van Houtem & Palm B.V., Ugchelen, Netherlands

Filed Feb. 4, 1981, Ser. No. 231,178
Claims priority, application Netherlands, Feb. 6, 1980, 8000734
Int. Cl.³ G01N 27/00
U.S. Cl. 324—316 **10 Claims**



1. A method of checking the authenticity of papers in a physical way which comprises using authentic paper containing a minor amount of a substance showing an electron spin resonance spectrum at room temperature, and checking the authenticity by electron spin resonance spectroscopy.

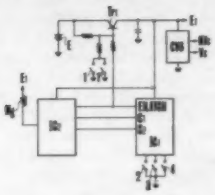
4,376,265
POWER SOURCE VOLTAGE CHECKING DEVICE PARTICULARLY FOR CHECKING THE VOLTAGE OF A BATTERY IN A CAMERA

Masayoshi Kiuchi; Masanori Uchidoi, both of Yokohama, and Hiroyasu Murakami, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 9, 1980, Ser. No. 185,608
Claims priority, application Japan, Sep. 12, 1979, 54-117494
Int. Cl.³ G01N 27/42
U.S. Cl. 324—426 **14 Claims**

1. A power source check device for a camera, said device comprising:
(a) a signal forming circuit arranged to produce a signal having a frequency corresponding to the voltage of a power source;
(b) power source voltage level detecting means for detecting the level of said power source voltage, said detecting means being arranged to produce a signal when the voltage of the power source reaches a given relation to a predetermined level;
(c) a control circuit coupled to said signal forming circuit, said control circuit being arranged to change the fre-

quency of the signal produced by said signal forming circuit in response to the signal from said detecting means stepwise for a prescribed amount; and



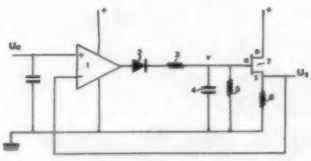
(d) indicating means arranged to be driven at the frequency of the signal produced by said signal forming circuit.

4,376,266

DEVICE FOR THE MONITORING OF PEAK VALUES OF A NONPERIODIC PHENOMENON WITH A LOW RECURRENCE RATE

Jean-Paul Raffoux, Paris, France, assignor to Jaeger, Levallois-Perret, France

Filed Oct. 10, 1980, Ser. No. 196,016
Claims priority, application France, Oct. 15, 1979, 79 25598
Int. Cl.³ G01N *27/42*
U.S. Cl. 324—426 **6 Claims**



1. An analog discharge signal monitor for monitoring a voltage signal from a power battery, said signal including a slow monotonous variation having peak values indicating no load periods of said battery, said peak values interspersed with non-significant portions of the signal during load periods of said battery, said non-significant portions having a variable duration, said duration being small with respect to the average time of discharge, said monitor comprising:

comparator means for comparing two inputs and for providing an output indicative of said comparison, one of said inputs being connected to terminals of said battery to receive a signal indicating the voltage produced by said battery;

means for rectifying said comparator means output, said rectifying means connected in series with said comparator means output, said rectifying means having an output;

parallel RC circuit means having a resistance, said RC circuit means coupled in parallel with the output of said rectifying means; and

high input impedance means having an input and an output, said impedance means input connected in parallel with said parallel RC circuit means, said impedance means output providing discharge information, said impedance means having said output coupled back to said other of said comparator inputs wherein said parallel RC circuit means has a time constant RC which substantially satisfies the condition $RC=t\ V/yxU$ where:

U is the initial peak value of the voltage of said battery;

V is the voltage across the RC circuit means with said peak value U applied to the monitor;

x is the predetermined fractional decrease in the voltage U permitted after which said battery is determined to be discharged;

t is an estimated value of the time duration of intervals between no load conditions of said battery wherein t is significantly shorter than the actual discharge time of said battery; and

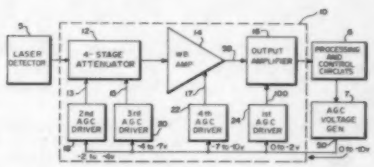
y is the permissible fractional error between the actual voltage decrease which takes place in said battery during time t and the decrease in voltage indicated by the output of said high input impedance means during time t.

4,376,267

VIDEO PREAMPLIFIER FOR LASER SYSTEMS

Tien W. Chu, Orlando, and Thomas W. Holland, Altamonte Springs, both of Fla., assignors to Martin Marietta Corporation, Bethesda, Md.

Filed Nov. 24, 1980, Ser. No. 209,580
Int. Cl.³ H03G *3/10*
U.S. Cl. 330—284 **18 Claims**



1. A gain controlled low noise preamplifier having a large dynamic range comprising:

output amplifier means having a signal input, a signal output, and a gain control voltage input, said output amplifier means having its gain reduced by an external dc voltage applied to said gain control input as said external voltage increases from essentially zero to a first preselected value, said reduction in gain proportional to said applied external dc voltage;

attenuator means having a pair of input terminals and a pair of output terminals, each of said pairs having a common ground terminal, said input terminals for receiving an input signal, said attenuator means having a gain control voltage input and having its attenuation increased by said external dc voltage applied to said attenuation control input only when said external voltage increases from said first preselected value to a second preselected value, said attenuator means thereby reducing the amplitude of the input signal appearing at said output terminals over a range proportional to the value of said external dc voltage between said first preselected value and said second preselected value; and

low noise amplifier means having a signal input connected to said output terminals of said attenuator means, a signal output connected to said signal input of said output amplifier means, and a gain control input for receiving said external voltage when the magnitude thereof is greater than said second preselected value, the gain of said low noise amplifier means being reduced as said external voltage increases from said second preselected value, said gain reduction proportional to the magnitude of said external dc voltage;

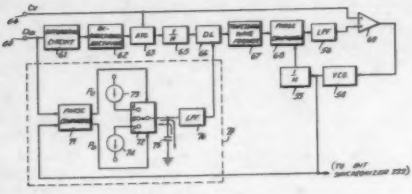
wherein said external dc voltage is proportional to the magnitude of said input signal, and said reductions in gain of said preamplifier do not significantly reduce the noise figure of said preamplifier.

4,376,268

PHASE LOCKED LOOP HAVING AUTOMATIC-INPUT TUNING AND PHASE CONTROL CIRCUITS

Ryusuke Moriya, Hadano, and Yasuhiro Fujimori, Tokyo, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Oct. 23, 1980, Ser. No. 200,009
Claims priority, application Japan, Oct. 31, 1979, 54-141671
Int. Cl.³ H03L 7/10
U.S. Cl. 331—10 17 Claims



1. An automatic phase-controlled oscillator for producing an output clocking signal whose phase and frequency vary with those of an input information signal applied thereto, comprising:

information signal input means for receiving said information signal;

control signal means for deriving a control signal representative of the frequency of said input information signal, but deriving said control signal independently from said information signal;

variable-frequency tuning circuit means for receiving said control signal and coupled to said input means for tuning on the basis of said control signal to pass said input information signal as a tuned signal; and

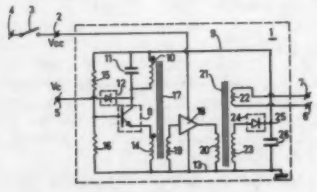
clocking signal generating circuit means for providing said output clocking signal in dependence upon the phase of said tuned signal.

4,376,269

ELECTRONIC SECURITY MEMORY INCLUDING ON-OFF CONTROLLED OSCILLATOR

Bernard-Edouard Forward, Paris, France, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 21, 1980, Ser. No. 209,089
Claims priority, application France, Nov. 21, 1979, 79 28720
Int. Cl.³ B61L 29/22; H03B 5/12
U.S. Cl. 331—117 R 5 Claims



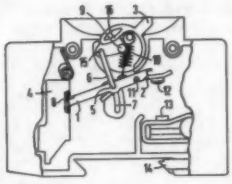
1. An electronic security memory comprising a first input for a d.c. supply voltage, a second input for a control signal, and an output, as well as a transistor oscillator, feedback being provided via a transformer from a primary winding of said transformer, to a first secondary winding, the primary winding being connected to the collector and the first secondary winding being connected to another electrode of the said transistor, in such a way that a feedback loop is formed in order to produce an oscillation whose frequency is determined by a first capacitor which is connected in parallel with said primary winding, said memory being reset to zero by interruption of the supply voltage, characterized in that the memory comprises a power amplifier which is powered via said first input, whose input voltage is supplied by a second secondary winding of said transformer, and which comprises two outputs, one direct current output which is supplied to a second capacitor whose charging voltage, during operation of said oscillator, enables said oscillation to be sustained, and a second, alternating current output which constitutes said output of the memory, said second input being connected to the collector of said transistor via a diode and supplying a d.c. control voltage having a value which is smaller than the value of the said charging voltage, said signal being capable of blocking said oscillator during its presence, and in the absence of an oscillation, its disappearance causing the oscillator to be unblocked and starting and maintaining an oscillation in the presence of said supply voltage.

4,376,270

CIRCUIT BREAKER

Martin Staffen, Barbing, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Fed. Rep. of Germany

Filed Sep. 2, 1981, Ser. No. 298,652
Claims priority, application Fed. Rep. of Germany, Sep. 15, 1980, 3034790
Int. Cl.³ H01H 73/02, 75/00, 77/00
U.S. Cl. 335—21 5 Claims



1. In a circuit breaker having a switch locking mechanism including a pivotable latch releasably mounted on a release member and which supports a pivotally mounted contact; a pivotally mounted manually operable element for operating the circuit breaker; and a spring connected with said manually operable element at a position offset with respect to the pivotal axis of the element and adapted to exert a force on said pivotable latch at a position proximate the pivotal axis of the latch, the improvement comprising:

a latching lever interconnecting the manually operable element and the pivotable latch, said lever being eccentrically connected with the manually operable element with respect to the pivotal axis of said element and being connected to said pivotable latch so as to form the pivotal axis of the latch;

a guide for guiding the movement of said latch lever responsive to operation of the manually operable element, said spring indirectly applying a force to said pivotable latch by engaging with said pivotally mounted contact supported by the latch.

4,376,271

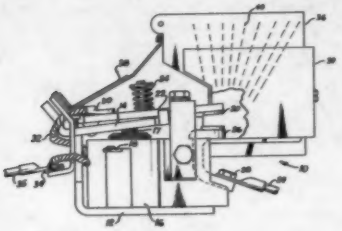
POLARIZED DC CONTACTORS

Paul M. Gallatin, Picayune, Miss., and Roger L. Robertson, Slidell, La., assignors to Siemens-Allis, Inc., Atlanta, Ga.

Filed Jun. 18, 1981, Ser. No. 274,769
Int. Cl.³ H01H 9/00
U.S. Cl. 335—159 11 Claims

1. A circuit interrupter for interrupting direct load current including a pair of separable contacts, an arc chute adjacent said contacts and permanent magnetic means associated with said arc chute for effecting movement of an arc drawn between said contacts, an armature for separating said contacts, a magnetic frame and a coil magnetically associated with said frame and armature to cause said armature to move relative to said

frame, said armature, frame and coil comprising a magnetic circuit, a conductor electrically coupled to one of said contacts for carrying load current, said conductor linking said magnetic circuit to weaken the magnetic flux therein when load current



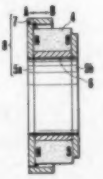
flows in a first direction and to strengthen the magnetic flux therein when load current flows in a second direction whereby the release time required for the contacts to separate is varied depending upon the direction and magnitude of load current.

4,376,272

MAGNETIC FIELD GENERATORS FOR USE IN ELECTROMAGNETIC FOCUSING TYPE CATHODE RAY TUBES

Kuniharu Osakabe; Isao Yoshimi, both of Mobara, and Soichi Sakurai, Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 9, 1981, Ser. No. 319,797
Claims priority, application Japan, Nov. 12, 1980, 55-158284
Int. Cl.³ H01F *3/12*
U.S. Cl. 335—211 6 Claims



1. In a magnetic field generator for use in an electromagnetic focusing type cathode ray tube of the type wherein the magnetic field generator is disposed on the outside of said cathode ray tube for focusing an electron beam in the tube and composed of a permanent magnet, a magnetic field adjusting mechanism for adjusting field intensity produced by said permanent magnet, and a magnetic member adapted to compensate for a temperature characteristic of said permanent magnet the improvement wherein said temperature characteristic compensating member is located at a position not affected by magnetic flux adjusted by said magnetic field adjusting mechanism.

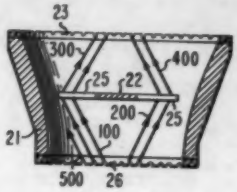
4,376,273

TELEVISION DEFLECTION YOKE HAVING A TOROIDALLY-WOUND DEFLECTION COIL

Robert W. Shisler, Noblesville, Ind., and William H. Barkow, Pennsauken, N.J., assignors to RCA Corporation, New York, N.Y.

Filed Jul. 24, 1981, Ser. No. 286,377
Int. Cl.³ H01H *1/00*
U.S. Cl. 335—213 5 Claims

1. A deflection yoke comprising:
a magnetically permeable core; and
a deflection coil, comprising a plurality of wire turns toroidally disposed on said core, said coil having a pair of coil halves, each of said coil halves comprising first and second winding segments occupying first and second arcuate regions of said core surface, each of said coil halves being



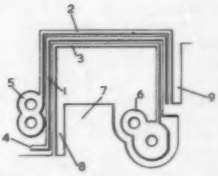
wound on said core such that active portions of succeeding wire turns are disposed alternately within said first and second arcuate regions of said core surface.

4,376,274

PRINTED CIRCUIT TRANSFORMERS

Daniel H. Smart, Morden, England, assignor to Communications Patents Limited, London, England

Filed Sep. 29, 1981, Ser. No. 306,601
Claims priority, application United Kingdom, Oct. 1, 1980, 8031656
Int. Cl.³ H01F *27/28*
U.S. Cl. 336—183 2 Claims



1. A printed circuit transformer comprising one primary track and two secondary tracks, the three tracks being located adjacent and substantially parallel to each other with one end of one of the secondary tracks and the other end of the other secondary track being connected to a common source of potential, characterised in that the primary track is located between the secondary tracks and all the tracks are printed wholly on one side of the circuit board.

4,376,275

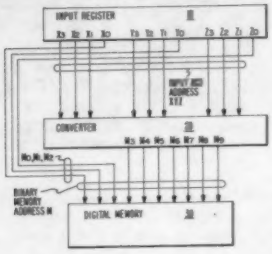
VERY FAST BCD-TO-BINARY CONVERTER

Laurence P. Flora, Covina, Calif., assignor to Burroughs Corporation, Detroit, Mich.

Filed Apr. 3, 1981, Ser. No. 250,865
Int. Cl.³ H03K *13/24*
U.S. Cl. 340—347 DD 11 Claims

1. In apparatus for converting a plurality of BCD binary signals representing a plurality of BCD digits into a plurality of binary signals representing an output binary number, the combination comprising:
a plurality of at least three AND-OR-INVERT gates provided at the same logical level, each AND-OR-INVERT gate having the following characteristics:
(1) the gate is provided on a single integrated circuit chip;
(2) the gate has an input capability of at least five input signals;
(3) the gate is capable of ORing at least two different logical functions of the inputs;
(4) at least one of the ORed functions includes an AND combination of at least two inputs;

(5) the gate output corresponds to the INVERTed ORed result; and
(6) the gate provides a worst-case delay of no greater than 7 nanoseconds;



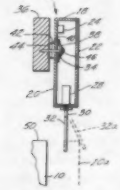
logic means responsive to particular ones of said BCD binary signals for applying a predetermined plurality of binary signals to each of said AND-OR-INVERT gates such that each AND-OR-INVERT gate provides a binary output signal corresponding to a different one of the binary signals representing said binary number.

4,376,276

DOOR ALARM WITH FLEXIBLE SWITCH ACTUATOR

Jesse Barta, 3141 River Forest Dr., Fort Wayne, Ind. 46805

Filed Sep. 14, 1981, Ser. No. 302,064
Int. Cl.[3] G08B *13/08*
U.S. Cl. 340—545 14 Claims



1. A door alarm comprising a support, an electrical alarm device carried by said support and including an elongated actuating arm that projects laterally beyond said support, said arm being movable between two spaced positions for actuating and deactuating, respectively, said alarm, said arm having a degree of flexibility whereby transverse engagement therewith by a door will deflect it to one side while moving it between said positions, and means mounting said support on a stationary object for movement between and holding said support in arming and disarming positions.

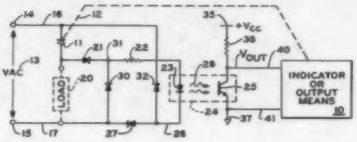
4,376,277

DYNAMIC CONTACT CHECKING CIRCUIT

Robert A. Black, Jr., Hennepin, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Oct. 17, 1980, Ser. No. 197,888
Int. Cl.[3] G08B *29/00*
U.S. Cl. 340—641 7 Claims

1. A dynamic contact checking means, including: opto-isolator means including light emitting diode means and light responsive transistor means which is capable of being electrically switched when said light emitting diode means conducts an electric current; bidirectional current conducing electric contact means adapted to controllably connect electric load means to a source of alternating current potential; first diode means connected in series with said light emitting diode means and said contact means to form first indicator circuit means; second diode means connected in series with said light emitting diode means to form second indicator circuit means; and said



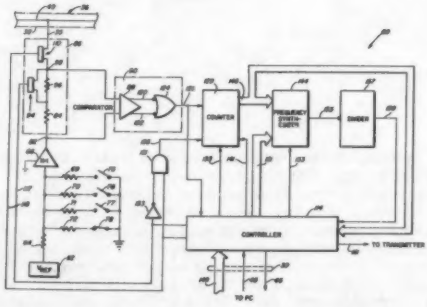
second indicator circuit means connected across said source of alternating current potential; said second circuit means conducting said current on every other half cycle of said alternating current potential, and said first circuit means conducting said current on the alternate half cycles of said alternating current potential when said contact means is closed.

4,376,278

APPARATUS AND METHOD FOR COLLISION AVOIDANCE

Herbert K. Jacobsthal, Scottsdale, Ariz., assignor to Honeywell Information Systems Inc., Phoenix, Ariz.

Filed Dec. 22, 1980, Ser. No. 219,149
Int. Cl.[3] H04Q *1/24*
U.S. Cl. 340—825.5 21 Claims

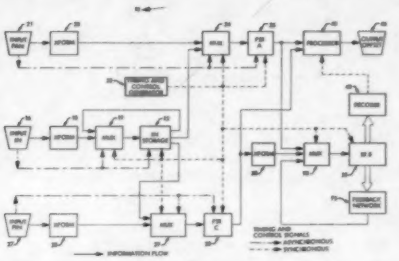


1. A collision avoidance apparatus for an information communication system having a communication medium capable of receiving and transferring information provided thereto, comprising:
a. a voltage source producing a predetermined voltage level at an output thereof;
b. a switching network connected intermediate said output of said voltage source and said communication medium for selectively providing said predetermined voltage level to said communication medium and the voltage level of said communication medium at an output thereof; and
c. a logic network operatively connected to said output of said switching network and to said output of said voltage source for indicating when the voltage level of said communication medium and said predetermined voltage level are substantially similar.

4,376,279
PERSONAL IDENTIFICATION SYSTEM

Marvin Perlman, Granada Hills, and Milton Goldfine, La Crescenta, both of Calif., assignors to Trans-Cryption, Inc., La Crescenta, Calif.

Filed Jan. 28, 1981, Ser. No. 229,085
Int. Cl.³ H04Q *9/00*
U.S. Cl. 235—380 **27 Claims**



1. For use in a personal identification system of the type in which a card is issued to a person by an entity with a personal assigned number, definable as PAN, being recorded on a machine readable magnetic stripe on the card, a generator for generating an Offset Number which is a function of at least said PAN and a secret code in the form of a digital sequence secretly chosen by and known only by said person, definable as PIN, said generator comprising:

first means including first feedback shift register means and interconnected feedback means adapted to assume cycles of states of equal length;

second means including feedback shift register means and interconnected feedback means adapted to assume cycles of states of equal length;

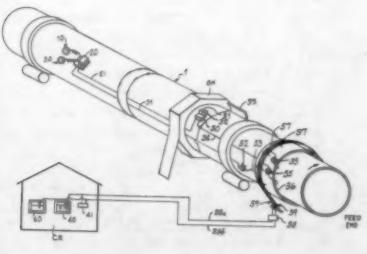
input means for storing digits related to PAN in said first feedback register means and digits related to PIN in said second feedback register means; and

control means for utilizing at least some of the digits in said first and second feedback shift register means to generate an Offset Number after digits related to said PAN and PIN were stored in said first and second feedback shift registers.

4,376,280
INSTRUMENT SYSTEM FOR IRON OXIDE REDUCING KILNS

Richard H. Davis, Franklin, Tenn.; Brian F. Bracanin, Busselton, and Ronald J. Clements, Capel, both of Australia, assignors to The Direct Reduction Corporation, New York, N.Y.

Filed Apr. 1, 1981, Ser. No. 250,006
Int. Cl.³ G01K *13/08*; G08C *19/16*
U.S. Cl. 340—870.17 **14 Claims**



1. A system for transferring signals indicative of the conditions within a rotary kiln to a location off the kiln comprising:

sensing means, disposed on the kiln, for sensing internal kiln conditions and producing millivolt signals indicative thereof;

converter means, disposed on the kiln, for converting said millivolt signals to milliamp signals;

two electrically continuous slip rings disposed on and encircling the kiln and connected across the output of said converter means;

stationary contact means, adjacent the kiln, for picking off the milliamp signals from said slip rings and transferring them to a location off the kiln;

a plurality of first access means, disposed in the kiln wall at spaced locations along its length, for permitting said sensing means access to the interior of the kiln and normally having a sensing means disposed therein;

a plurality of second access means, respectively disposed in the kiln wall at locations adjacent to said first plurality of access means for permitting said sensing means access to the interior of the kiln and normally having no sensing means disposed therein;

electrical plug means, disposed on each sensing means, for conducting said condition indicative millivolt signals;

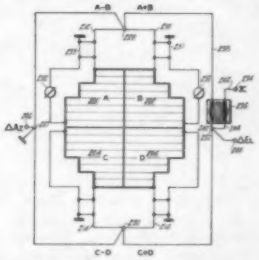
receptacle means, disposed adjacent to each of said first access means, for accepting said plug means; and

means for conducting said millivolt signals from said receptacle means to said converter means.

4,376,281
MULTIMODE ARRAY ANTENNA

Peter W. Smith, Westport, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Dec. 23, 1980, Ser. No. 219,744
Int. Cl.³ H01Q *13/10*
U.S. Cl. 343—768 **10 Claims**



1. An array antenna connectable to an input/output port for forming an aperture to transmit or receive radar signals, said array antenna being switchable between at least two modes, comprising:

aperture means having an upper portion and a lower portion, each including a plurality of laterally extending waveguides with a number of radiating elements disposed thereon;

a lower intermediate feed means communicating with each of said laterally extending waveguides of said lower portion of said aperture means, for dividing the energy of an illuminating radar signal among, or for combining the energy of a received radar signal from, said laterally extending waveguides;

upper intermediate feed means communicating with each of said laterally extending waveguides of said upper portion of said aperture means, for dividing the energy of an illuminating radar signal among, or for combining the energy of a received radar signal from, said laterally extending waveguides; and

switch means having at least a first position and a second position, and connected between said input/output port,

and said lower intermediate feed and said upper intermediate feed for coupling radar signals;

whereby when said switch means is in said first position, said input/output port is connected to both said upper intermediate feed and said lower intermediate feed causing said array antenna to be in its first mode, and when said switch means is in said second position, only one of said intermediate feed means is connected to said input/output port causing said array antenna to be in its second mode.

4,376,282

OPTICAL PRINT HEAD WITH GRADED INDEX FIBER ARRAYS FOR OPTICAL PRINTING DEVICES

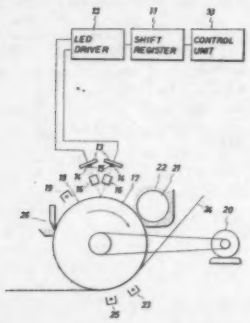
Shintaro Kotani; Ichimatsu Abiko, both of Tokyo; Yukio Tokunaga, and Kazuyoshi Tateishi, both of Yokosuka, all of Japan, assignors to Oki Electric Industry Co., Ltd. and Nippon Telegraph and Telephone Public Corporation, both of Tokyo, Japan

Filed Aug. 15, 1980, Ser. No. 178,540

Claims priority, application Japan, Aug. 21, 1979, 54-105574

Int. Cl.³ G01D *9/42;* **B41B** *13/00*

U.S. Cl. 346—107 R **7 Claims**



1. An optical print head for optical printing devices comprising light emitting device arrays having a plurality of light emitting devices selectively energized and arranged in a row, said light emitting device arrays being arranged in a plurality of rows with said light emitting devices aligned in a common direction with said light emitting device arrays, and a plurality of graded index optical fiber arrays focusing the whole of light images from said light emitting devices so as to be formed in a single image line on a photosensitive surface of photosensitive means, each of said graded index optical fiber arrays being arranged opposite to each corresponding row of said light emitting device arrays and each of said graded index fiber arrays having an equimultiple lens power.

4,376,283

METHOD AND APPARATUS FOR USING A DISPOSABLE INK JET ASSEMBLY IN A FACSIMILE SYSTEM AND THE LIKE

Kenneth W. Bower, New Milford, Conn., assignor to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Nov. 3, 1980, Ser. No. 203,583

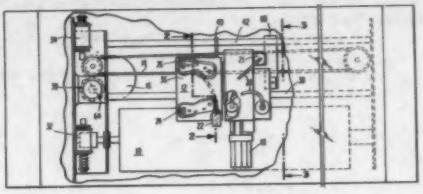
Int. Cl.³ G01D *15/18*

U.S. Cl. 346—140 R **11 Claims**

7. A disposable ink jet apparatus for use in a facsimile system comprising:

an ink jet reservoir;

an ink jet mounted on and carried by said reservoir;



means for priming and purging said ink jet mounted on and supported by said reservoir; and

means for coupling said ink jet to said reservoir.

4,376,284

INK JET PRINT HEAD

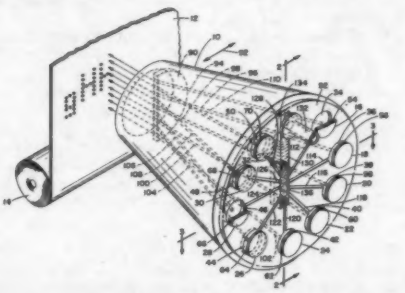
Leonhard Bader, Pferseer Str. 5, 8901 Stadtbergen; Frank Giessner, Ulrichsplatz 13, and Helmut Weber, Ramsbergstr. 10, both of 8900 Augsburg, all of Fed. Rep. of Germany

Continuation of Ser. No. 140,065, Apr. 14, 1980, abandoned, which is a continuation of Ser. No. 969,904, Dec. 15, 1978, abandoned. This application Jan. 22, 1982, Ser. No. 341,811

Claims priority, application Fed. Rep. of Germany, Feb. 27, 1978, 2808275

Int. Cl.³ G01D *15/18*

U.S. Cl. 346—140 R **3 Claims**



1. An ink jet print head movable in a direction along a line of printing and comprising a

plurality of ink drive elements positioned in a circular and substantially planar arrangement at one end of said print head, a

plurality of ink nozzles positioned in alignment at the other end of said print head,

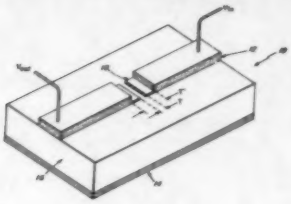
conduit means connecting said drive elements and said ink nozzles for flow of ink therethrough, and

ink supply means at said one end of said print head including an elongated ink container centrally positioned at said one end in a plane generally perpendicular to the direction of movement of said print head and disposed in a plane with ink supply lines extending in planar manner radially in a direction from said elongated container to said ink drive elements and substantially parallel with said line of printing for supplying ink from said container to said drive elements and having end portions of said ink supply lines originating from the elongated plane of said ink container, whereby the acceleration effect on the ink in said conduit means and in the lines of said ink supply means by reason of high pressure resulting from movement of said print head in a lateral direction is compensated so that said drive elements provide an even flow of ink to said nozzles.

4,376,285
HIGH SPEED OPTOELECTRONIC SWITCH

Frederick J. Leonberger, Lexington, and Frederick J. O'Donnell, Billerica, both of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Jun. 23, 1980, Ser. No. 162,073
Int. Cl.³ H01L 27/12, 27/48, 29/161, 27/14
U.S. Cl. 357—17 16 Claims



1. An optoelectronic switch responsive to low power high repetition rate photon pulses comprising:

a semi-insulating indium phosphide substrate disposed intermediate a pair of parallel electrically conducting surfaces one of said layers having an electrically non-conductive gap defined by at least two edges of said one electrically conductive layer which upon being illuminated by photons is rendered electrically conductive.

13. A dual frequency optoelectronic switch comprising:

a first device having a semi-insulating substrate intermediate first and second electrically conductive strips the first of said strips having a non-conducting gap;

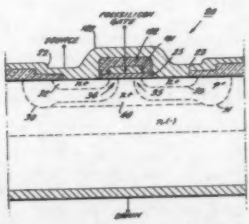
a second device with a semi-insulating layer intermediate first and second electrically conductive strips the first of said strips having a non-conductive gap and the second of said strips being common with the second strip of said first device;

said first and second devices being disposed adjacent one another so that the nonconducting gaps are in registry.

4,376,286
HIGH POWER MOSFET WITH LOW ON-RESISTANCE AND HIGH BREAKDOWN VOLTAGE

Alexander Lidow, Manhattan, and Thomas Herman, Redondo, both of Calif., assignors to International Rectifier Corporation, Los Angeles, Calif.

Continuation of Ser. No. 951,310, Oct. 13, 1978, abandoned.
This application Feb. 9, 1981, Ser. No. 232,713
Int. Cl.³ H01L 29/78
U.S. Cl. 357—23 26 Claims



1. A high power metal oxide silicon field effect transistor device exhibiting relatively low on-resistance and relatively high breakdown voltage; said device comprising:

a wafer of semiconductor material having first and second opposing semiconductor surfaces; said wafer of semiconductor material having a relatively lightly doped major body portion for receiving junctions and being doped with impurities of one conductivity type;

at least first and second spaced base regions of the opposite conductivity type to said one conductivity type formed in said wafer and extending from said first semiconductor surface to a first depth beneath said first semiconductor surface; the space between said at least first and second base regions defining a common conduction region of one conductivity type at a given first semiconductor surface location;

first and second source regions of said one conductivity type formed in each pair of said at least first and second base regions respectively at first and second first surface locations and extending from said first and second first surface locations to a depth less than said first depth; said first and second source regions being laterally spaced along said first semiconductor surface from the facing respective edges of said common conduction region thereby to define first and second channel regions along said first semiconductor surface between each pair of said first and second source regions, respectively and said common conduction region;

source electrode means connected to said source regions;

gate insulation layer means on said first surface, disposed at least on said first and second channel regions;

gate electrode means on said gate insulation layer means and overlying said first and second channel regions;

a drain conductive region remote from said common region and separated therefrom by said relatively lightly doped major body portion;

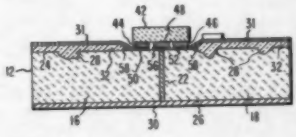
a drain electrode coupled to said drain conductive region;

said common region being relatively highly doped, compared to said relatively lightly doped major body portion and extending from said given first semiconductor surface location to a depth greater than the depth of said source region, whereby resistance to current flow at the junctures between said first and second surface channel regions and said common region and between said common region and said relatively lightly doped major body portion is reduced.

4,376,287
MICROWAVE POWER CIRCUIT WITH AN ACTIVE DEVICE MOUNTED ON A HEAT DISSIPATING SUBSTRATE

Franco N. Sechi, Lawrenceville, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Oct. 29, 1980, Ser. No. 201,827
Int. Cl.³ H03F 3/60; H01L 23/02, 39/02
U.S. Cl. 357—80 8 Claims



1. A microwave power amplifier circuit comprising in combination:

a substrate of the type which is substantially electrically insulative and provides a relatively high thermal conductivity and which has an undesirably relatively rough surface;

a dielectric layer of material directly in contact with said relatively rough surface forming a relatively smooth surface;

a conductive material disposed in a predetermined pattern on said dielectric layer; and

a heat generating amplifying device having at least two electrodes, one of which is connected to said conductive

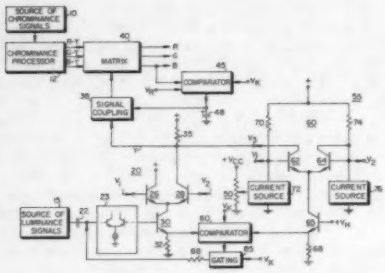
material and another of which is thermally connected to said substrate to pass heat thereto.

4,376,288

SIGNAL GAIN CONTROL WITH DC COMPENSATION

Robert L. Shanley, II, and Robert P. Parker, both of Indianapolis, Ind., assignors to RCA Corporation, New York, N.Y.

Filed Aug. 27, 1981, Ser. No. 296,864
Int. Cl.³ H04N 5/16
U.S. Cl. 358—39 **21 Claims**



1. Signal processing apparatus comprising:

a source of input signals;

direct current coupled signal processing means responsive to said input signals and including:

amplifier means with associated bias means for establishing the DC bias of said amplifier means; and

gain control means with associated bias means for establishing the DC bias of said gain control means, said gain control means providing a gain control signal for controlling the gain of said amplifier means and also providing a DC compensation signal for said amplifier means such that the DC output level of said amplifier means is compensated to remain substantially constant as said amplifier means is gain controlled in response to said gain control signal;

sensing means responsive to a voltage representative of said DC bias of said amplifier means and to a voltage representative of said DC bias of said gain control means, for providing an output control voltage representative of a deviation of said bias of said amplifier means and said bias of said gain control means from a prescribed mutual relationship; and

means for coupling said control voltage to said signal processing means for correcting said deviation, so that said DC compensation of said DC output level of said amplifier means is preserved.

4,376,289

SELF-ENABLING DROPOUT CORRECTOR

Glenn A. Reitmeier, Trenton, and Frank J. Marlowe, Kingston, both of N.J., assignors to RCA Corporation, New York, N.Y.

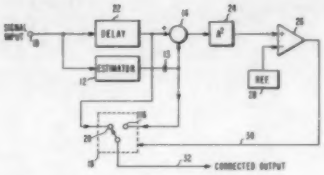
Filed Oct. 27, 1980, Ser. No. 201,058
Int. Cl.³ H04N 5/34
U.S. Cl. 358—163 **11 Claims**

1. A television dropout compensator for video signals from a source of video signals which video signals are subject to dropouts, comprising:

estimating means coupled to the source of video signals for forming an estimated signal representing an estimate of the value of each pixel of said video signals;

comparison means coupled to said estimating means and to said source of signals for comparing each pixel of said video signal with the corresponding estimated signal for generating an error signal representative of the difference therebetween;

threshold means coupled to said comparison means for comparing said error signal with a reference value and for generating a dropout signal when said error signal exceeds said reference value; and



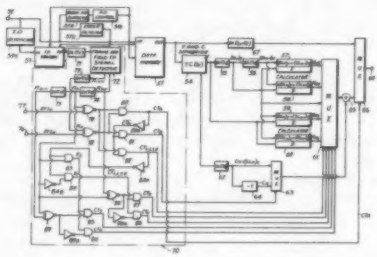
gating means coupled to said threshold means, to said source of signals and to said estimating means for coupling said estimating means to an output terminal of the dropout compensator in response to said dropout signal.

4,376,290

COLOR VIDEO INFORMATION PROCESSING APPARATUS

Norihisa Shirota, Atsugi, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Oct. 16, 1980, Ser. No. 197,567
Claims priority, application Japan, Oct. 16, 1979, 54-133314
Int. Cl.³ H04N 5/76
U.S. Cl. 358—314 **22 Claims**



1. An apparatus for processing color video information composed of a color video signal having luminance and chrominance components and a respective identifying signal which identifies a phase of said chrominance component, said color video information being in the form of a digital signal divided into a succession of blocks each containing data of said color video signal and said respective identifying signal which identifies at least one of the frame, field and line of said data of the color video signal contained in the respective block, said apparatus comprising:

memory means for temporarily storing said color video signal and said respective identifying signal,

means for simultaneously reading out said color video signal and the respective identifying signal from said memory means,

means for effecting a comparison of said identifying signal, as read out of said memory means, with a reference signal,

means responsive to said comparison for controlling the phase of said chrominance component of the color video signal read out from said memory means,

line interpolating means also responsive to said comparison for providing an interpolated value of at least said luminance component of a data block being read out of said memory means when said identifying signal being simultaneously read out identifies a field different from a field identified by said reference signal, said interpolated value being based on the value of the luminance component in the line of said data block being read out of said memory

means and on the value of the luminance component in an adjacent line stored in said memory means, and

interpolator control means for said interpolating means causing said adjacent line to be the line which precedes the line of the data block being read out when said different fields identified by said identifying signal and said reference signal, respectively, are of the same frame and causing said adjacent line to be the line which follows the line of the data block being read out when said different fields are from different frames, respectively.

4,376,291

METHOD OF COMPENSATING TIME FAULTS IN A DIGITAL COLOR TELEVISION SIGNAL

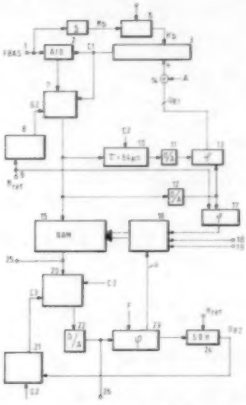
Jürgen Heitmann, Seeheim, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jul. 2, 1981, Ser. No. 279,747

Claims priority, application Fed. Rep. of Germany, Jul. 12, 1980, 3026473

Int. Cl.³ H04N *9/493*

U.S. Cl. 358—320 **5 Claims**



1. A method of compensating time faults in a colour television signal reproduced from an information carrier and converted into digital form, comprising producing a first clock signal whose phase position is determined by horizontal frequency synchronising signals in the colour television signals reproduced from the information carrier and whose frequency is adjustable by a first control signal, the first clock signal being used for both analogue/digital conversion of the reproduced colour television signal and for reading the resultant digital signal into a first memory, reading out the digital signal from the first memory under the control of a second clock signal whose frequency is an integral multiple of a horizontal frequency reference signal, measuring the difference between the line period of the digital signal read out from the first memory and the line period defined by the reference signal for deriving the said first control signal, determining the phase difference between the horizontal frequency pulses of the reference signal and the horizontal frequency pulses of the digital signal read out from the first memory, reading the digital signal from the first memory into and out of a second memory with a delay corresponding to the phase difference so determined, reading the signals from the second memory into a third memory under the control of the second clock signal, reading the digital signal out of the third memory under the control of a third clock signal obtained from the second clock signal by a controllable phase shift, effecting a phase comparison between the colour synchronising signal of the digital signal read out from the third memory and a reference colour synchronising signal, and using the result of the phase comparison to obtain a second control signal which is used for controlling the phase shift of the second clock signal.

4,376,292

APPARATUS FOR ERASING AND REPRODUCING AUDIO SIGNALS

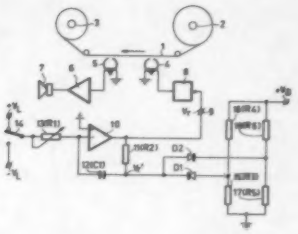
Georges M. A. Mignolet, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jun. 23, 1980, Ser. No. 161,960

Claims priority, application Netherlands, Jul. 3, 1979, 7905160

Int. Cl.³ G11B *5/47*

U.S. Cl. 360—66 **13 Claims**



1. An apparatus for reproducing audio signals recorded on a magnetic recording medium, which comprises:

a head for reproducing the audio signals;

a head for erasing the audio signals;

means associated with said erasing head for providing relative motion of the medium past said erasing head, and

erase current generator means electrically connected to said erasing head for applying an erase current to said erasing head, said generator means including means for switching said generator means on and off such that, after switching on, said generator means applies to said erasing head a current whose amplitude increases as a first function of time and, after switching off, applies to said erasing head a current whose amplitude decreases as a second function of time, at least one of said functions of time having first, second and third sequential ranges, in each of said ranges the current having a respective slope as a function of time, which slope is determined primarily by respective first, second and third time constants, said first and third time constants each being substantially greater than the second time constant.

4,376,293

MAGNETIC DISK RECORDING AND/OR REPRODUCING DEVICE

Nobuyasu Teramura, and Hiroshi Kobayashi, both of Yokohama, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Dec. 16, 1980, Ser. No. 216,973

Claims priority, application Japan, Dec. 27, 1979, 54-184119[U]

Int. Cl.³ G11B *17/00, 19/10*

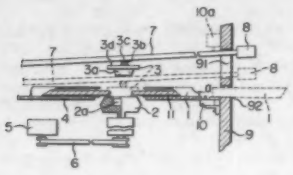
U.S. Cl. 360—71 **4 Claims**

1. A magnetic disk recording and/or reproducing device of the type in which a magnetic disk clamping means locates and holds a flexible magnetic disk accurately concentric with the axis of rotation of a spindle which is spinning, characterized by

a sensor means adapted to detect the insertion of a flexible magnetic disk into said recording or reproducing device and generate an output detected signal,

a timer means energized in response to said output detected signal from said sensor means and de-energized after a predetermined time interval, and

a switching means adapted to be energized in response to an output signal from said timer, thereby closing and opening



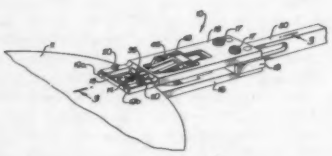
a drive circuit for driving a motor for spinning said spindle.

4,376,294

HEAD LOADING AND RETRACTION APPARATUS FOR MAGNETIC DISC STORAGE SYSTEMS

Markus Meier, Carpinteria, and David A. Sutton, Santa Ynez, both of Calif., assignors to DMA Systems Corporation, Goleta, Calif.

Filed Nov. 16, 1981, Ser. No. 321,884
Int. Cl.³ G11B 21/02, 5/54
U.S. Cl. 360—105 10 Claims



1. Apparatus for supporting a magnetic head assembly adjacent a recording surface for transcribing thereon, comprising:

a cantilevered support arm;

a resilient member attached to the free end of said support arm;

a magnetic head assembly carried by said resilient member;

a lift bail connected to said head assembly;

a force arm attached to said support arm for applying a force to said head assembly on the side thereof opposite to the transducing side thereof;

a lifting finger attached to said force arm at the point where said force arm engages said head assembly, said lifting finger extending into but not engaging said lift bail when said force arm is engaging said head assembly; and

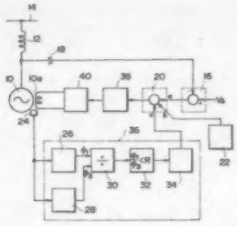
means for moving said force arm out of contact with said head assembly to remove said force therefrom, said lifting finger engaging said lift bail when said force arm is moved to simultaneously move said head assembly away from said recording surface, said lift bail being spaced laterally from the point where said force arm applies said force to said head assembly so as to provide for different locations for load force and retract force.

4,376,295

SYSTEM FOR PREDICTING DESYNCHRONIZATION OF A SYNCHRONOUS MACHINE

Chikasa Uenosono; Takao Okada; Junya Matsuki, all of Kyoto; Tadashi Naito; Shinichiro Inoue, both of Kawasaki, and Yoshizo Obata, No. 236, Tanabe Higashino-cho 3-chome, Higashi-Sumiyoshi-ku, Osaka-shi, Osaka-fu, all of Japan, assignors to Fuji Electric Co. Ltd. and Yoshizo Obata, both of Kanagawa, Japan

Continuation of Ser. No. 123,963, Feb. 25, 1980, abandoned.
This application Mar. 15, 1982, Ser. No. 358,471
Claims priority, application Japan, Feb. 27, 1979, 54-2143
Int. Cl.³ H02H 7/06
U.S. Cl. 361—21 3 Claims



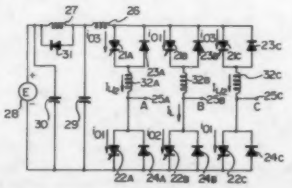
1. A method for predicting and regulating desynchronization of a synchronous machine, in which a voltage detected through a voltage transformer from an armature terminal of the synchronous machine is compared with a reference voltage by a voltage deviation detector and the resulting voltage deviation performs excitation of a field winding through an automatic voltage regulator and an excitation unit, and in which a gap flux detector is installed in the synchronous machine to detect its gap flux from which a functional value of a fundamental harmonic component and/or a higher harmonic component is detected through an analyzer and the resulting functional value of the fundamental harmonic component and/or the higher harmonic component is compared with a predetermined reference level by a signal level comparator for predicting the desynchronization by detecting a shift from the reference level, the resulting detected signal for predicting the desynchronization being added through an amplifier and an adder to the voltage deviation obtained by the voltage deviation detector and then being fed to the automatic voltage regulator for regulating the excitation of the field winding.

4,376,296

DC-SIDE COMMUTATED INVERTER

Pradeep M. Bhagwat, Baltimore, Md., and Victor R. Stefanovic, Columbia, Mo., assignors to Canadian Patents & Dev. Ltd., Ottawa, Canada

Filed Mar. 2, 1981, Ser. No. 239,383
Int. Cl.³ H02M 1/06, 7/515
U.S. Cl. 363—138 4 Claims



1. In an N-phase inverter having N parallel inverter legs connected across a pair of input lines for connection to a DC

source and having isolation inductance means connected to the input lines, wherein each leg includes a pair of thyristors in series, an output terminal between the thyristors, and a diode connected in reverse direction across each thyristor; a commutation circuit for the N legs comprising:

effective commutating inductance means L_c including a first inductor L_1 connected in series with the inverter legs, and a second inductor L_2 connected in each of the inverter legs whereby $L_c = L_1 + L_2/N$; and

commutating capacitance means connected across the effective inductance means and the inverter legs.

4,376,297

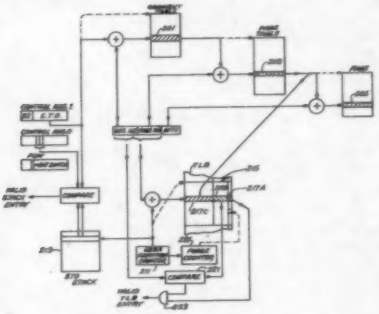
VIRTUAL MEMORY ADDRESSING DEVICE

Jared A. Anderson, Woodside; Robert V. Van Gelder, Berkeley; Lauren F. Yazolino, Oakland, and Jimmy E. Braun, Orange, all of Calif., assignors to Signetics Corporation, Sunnyvale, Calif.

Division of Ser. No. 894,925, Apr. 10, 1978, abandoned. This application Jun. 2, 1980, Ser. No. 155,694

Int. Cl.³ G06F 9/32

U.S. Cl. 364—200 **1 Claim**



1. In a computing system of the class adapted for virtual memory operation and including a main memory for storing data and instructions at locations specified by physical address values, a central processor for executing a plurality of user programs, each of said user programs including instructions in which main memory locations are specified by logical address values, control storage means in said central processor for storing a directory table origin value which specifies the main memory location of a directory table information structure which relates the logical address values of the currently executing user program to correspondence physical address values, and a dynamic address translation unit for converting said logical address values into physical address values by means of a look up operation employing said directory table information structure, an improved arrangement for bypassing said table look up operation for a limited number of previously translated logical address values which comprises, in combination:

a user partition storage register;

an origin value stack memory for storing origin values associated with user programs previously executed by said central processor, each of said origin values being stored in said origin value stack memory at a location specified by a pointer value stored in said partition storage register;

means responsive to a change in the contents of said control storage means for varying said pointer value to search said stack memory for a previously stored origin value equivalent to the origin value currently resident in said control storage means;

means for indicating a valid pointer value upon the successful completion of said search,

a translation lookaside buffer memory composed of a directly addressable random access memory for storing physical address values corresponding to previously translated logical address values at locations specified by a buffer address; and

means for forming said buffer address from the combination of at least a selected portion of the logical address value to be translated and said valid pointer value to access a selected one of said physical address values.

4,376,298

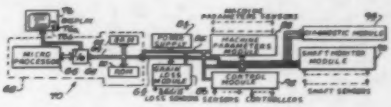
COMBINE DATA CENTER

David G. Sokol; Roger B. Whitaker, both of Auburn; John J. Lord, Springfield, and David M. Beuss, Virden, all of Ill., assignors to Dickey-john Corporation, Auburn, Ill.

Filed Aug. 6, 1980, Ser. No. 175,906

Int. Cl.³ G06F 15/20; G08B 19/00; A01D 41/00

U.S. Cl. 364—551 **21 Claims**



21. A monitoring and control system for an agricultural machine including a plurality of sensors for detecting a plurality of machine functions and for producing corresponding sensor signals, said monitoring and control system including executive monitoring and control means responsive to input data for producing display signals, a video display capable of displaying a plurality of lines of alphanumeric information in response to said display signals, memory means containing calibration data corresponding to operations for the calibration of said monitoring and control system for operation with a particular machine and coupled with said executive monitor and control means for display of said calibration data, automatic load calibration means for calibrating the operation of one or more combine parts which are variably loaded during the combining operation and responsive to said calibration data and to selected ones of said sensors for calibrating load control means for control of the operation of said variably loaded combine parts, monitoring module means capable of being coupled with said executive monitor and control means and including means responsive to selected ones of said sensors for converting said sensor signals to data usable by said executive monitor and control means, and control module means capable of being coupled with said executive monitor and control means and including means responsive to selected ones of said sensors for converting said sensor signals to data usable by said executive monitor and control means and diagnostic means including diagnostic memory means for containing failure data corresponding to the expected range of values of each of said sensor signals if produced by a properly functioning sensor and capable of being coupled with said executive monitor and control means for comparing the expected range of values of each sensor signal with its actual value and for producing failure data in the event of a predetermined comparison therebetween for display of corresponding failure and diagnostic information.

4,376,299

DATA CENTER FOR REMOTE POSTAGE METER RECHARGING SYSTEM HAVING PHYSICALLY SECURE ENCRYPTING APPARATUS AND EMPLOYING ENCRYPTED SEED NUMBER SIGNALS

Ronald L. Rivest, Belmont, Mass., assignor to Pitney Bowes, Inc., Stamford, Conn.

Filed Jul. 14, 1980, Ser. No. 168,931

Int. Cl.³ H04L 9/00

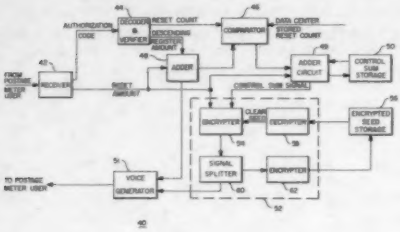
U.S. Cl. 364—900 **12 Claims**

1. A data center for a remote postage meter recharging system of the type adapted recharge remotely located postage

meters, each of said postage meters having signal information stored therein for use in recharging said postage meter with additional postage, comprising:

means for receiving resetting signal information associated with a selected one of said remotely located postage meters;

means coupled to said receiving means for processing said resetting information;



means for storing encrypted signal information equivalent to said signal information stored in each of said postage meters; and

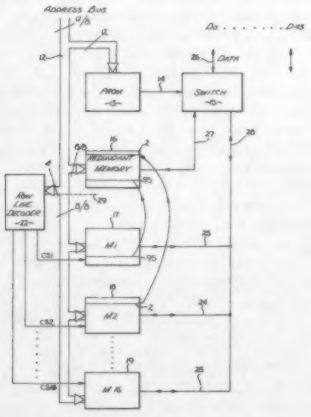
sealed unit means coupled to said resetting signal information processing means and to said means for storing encrypted signal information for processing received resetting signal information and stored encrypted signal information to generate a signal for use in resetting said selected one of said remotely located meters.

4,376,300

MEMORY SYSTEM EMPLOYING MOSTLY GOOD MEMORIES

Siu K. Tsang, San Jose, Calif., assignor to Intel Corporation, Santa Clara, Calif.

Filed Jan. 2, 1981, Ser. No. 221,316
Int. Cl.³ G11C *11/40*
U.S. Cl. 365—200 **13 Claims**



1. In a memory system employing a plurality of memories, each of which are coupled to receive first and second address signals for accessing first and second lines, respectively in said memories, an improvement for permitting use of ones of said memories having defective elements, comprising:

a plurality of said memories, each having defective first lines which are accessed by different first address signals, said memories coupled to receive said first and second address signals;

a programmable memory, programmed to provide a predetermined output signal upon receipt of each of said different first address signals, said programmable memory coupled to receive said first address signals;

an additional memory, coupled to receive said first address signals; and,

a selection means for selecting signals such that said additional memory is selected when said defective first lines are accessed, said selection means coupled to said memories and said additional memory, said selection means being controlled by said predetermined output signal from said programmable memory so as to cause selection of said additional memory,

whereby a plurality of mostly good memories may be used in said memory system for said memories.

4,376,301

SEISMIC STREAMER LOCATOR

F. Alex Roberts, Brea, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Dec. 10, 1980, Ser. No. 215,207
Int. Cl.³ G01V *1/38*
U.S. Cl. 367—19 **9 Claims**

1. Apparatus for use in redundantly determining the position of a seismic marine streamer towed directly behind the stern of a vessel, which comprises:

at least a pair of acoustic sources mounted outboard from the stern of the vessel beneath the water surface, said acoustic sources being laterally spaced apart from each other, and each capable of generating a high frequency acoustic pulse of short duration;

means operable on said vessel for causing each of said sources to generate a first pulse;

at least one hydrophone housed in said streamer capable of receiving each of said first acoustic pulses from each of said sources;

means for transmitting a signal to said vessel through a separate channel in said streamer in response to each of said first pulses received by said hydrophone;

means for monitoring said separate channel from said hydrophone during given time periods and for blocking signals transmitted through said channel during those time periods in which no signal from either of said sources is anticipated;

triggering means responsive to a transmitted hydrophone signal passing through said channel during one of said given time periods for causing either of said pair of said

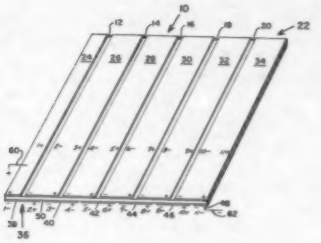
acoustic sources to generate a successive pulse in response to a signal from said hydrophone representing reception of an acoustic pulse from the same acoustic source; and

means for separately counting the number of times signals are emitted by said selected hydrophone to generate said successive pulses from each of said pair of acoustic sources and for separately measuring the elapsed times from the first initiated pulse to the receipt of the last selected number of hydrophone signals detected from each of said pair of acoustic sources.

4,376,302
PIEZOELECTRIC POLYMER HYDROPHONE

Harry B. Miller, Niantic, Conn., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 13, 1978, Ser. No. 895,828
Int. Cl.³ H04R 17/00
U.S. Cl. 367—157 **2 Claims**



1. A device for converting acoustic signals into electric voltage signals comprising:

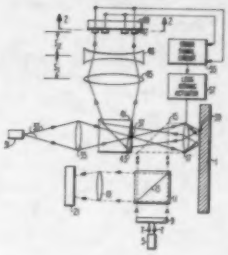
at least one relatively thin sheet of a piezoelectric polymer having a first plurality of metalized strips on the top surface thereof, having adjacent members separated by a first group of insulating spaces; and a second plurality of metalized strips at the bottom surface thereof, having adjacent members separated by a second group of insulating spaces; the members of said first plurality of metalized strips being staggered from the corresponding members of said second plurality of metalized strips; adjacent strips of said polymer sheet associated with said first plurality of metalized strips and said second plurality of metalized strips having been polarized and being automatically and inherently electrically connected in series for generating electric voltage signals in response to the acoustic signals.

4,376,303
QUASI-ZOOM LENS OPTICAL FOCUS SENSOR

Michael J. Lurie, East Brunswick, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Dec. 19, 1980, Ser. No. 218,073
Int. Cl.³ G11B 7/12
U.S. Cl. 369—45 **5 Claims**

1. In an information retrieval system for use in playback of a record medium having information stored along successive, elongated tracks on a flat, reflective surface thereof, said system having a first light source emitting a light beam of a given wavelength; first means for projecting said light beam emitted by said first light source to impinge on said reflective surface of said record medium as a circular spot having a diameter sufficiently large to span a plurality of said elongated tracks; second means for imaging said circular spot to a conjugate circular image at a plane remote from said reflective surface of said record medium; means, positioned at said conjugate image plane, for measuring the diameter of said circular image ofsaid circular spot; a first given diameter of said circular image of said circular spot, being representative of an in-focus condition; and means, responsive to said measuring means, for varying the position of said first projecting means to maintain the diameter of siad circular image at said first given diameter such that said in-focus condition is effected; the improvement comprising: said second means for imaging including a quasi-zoom

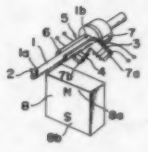


lens arrangement, said quasi-zoom lens arrangement including first and second lenses forming a telephoto lens system whereby the diameter of said conjugate circular image at said remote plane is varied, without degrading the focus condition at said remote plane, when the position of said second lens is adjusted.

4,376,304
MOVING COIL TYPE STEREOPHONIC PICKUP CARTRIDGE

Ryuichi Uchida, Fussa; Kaoru Terasaki, and Takeo Nishino, both of Kokubunji, all of Japan, assignors to Nippon Atsudenki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 117,569, Feb. 1, 1980, abandoned. This application Jun. 26, 1981, Ser. No. 277,882
Claims priority, application Japan, Jun. 22, 1979, 54-78961; Oct. 9, 1979, 54-130249
Int. Cl.³ H04R 9/16
U.S. Cl. 369—136 **13 Claims**



1. A moving coil type stereophonic pickup cartridge comprising:

a. a body, a cantilever vibrationally supported at its rearward end by the body, and a stylus fixed to the forward end of the cantilever;

b. an armature made of high magnetic permeability material fixed to the cantilever for movement therewith, the armature comprising a first leg portion, a second leg portion, and a third leg portion, the first leg portion fixed to the rearward portion of the cantilever and arranged parallel to the axial direction of the cantilever, and the second and third leg portions extending radially from the axis of said first leg portion;

c. a pair of moving coils, one each of the coils being situated on the second leg portion and on the third leg portion of said armature;

d. a magnetic source, only one pole of which is adjacent to the three leg portions of the armature; and

e. an open return path from the three leg portions of the

armature to the other pole of the magnetic source remotely situated with respect to the armature.

4,376,305

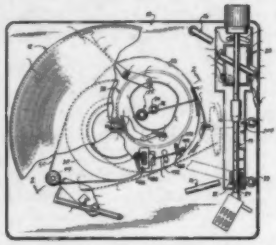
AUTOMATIC RECORD PLAYER

James T. Dennis, P.O. Box 15100, Oklahoma City, Okla. 73155, and George Kolomayets, Chicago, Ill., assignors to James T. Dennis, Oklahoma City, Okla.

Division of Ser. No. 9,254, Feb. 5, 1979, Pat. No. 4,291,886, which is a continuation of Ser. No. 813,225, Jul. 5, 1977, abandoned. This application Nov. 28, 1980, Ser. No. 211,369

Int. Cl.³ G11B *17/04*

U.S. Cl. 369—210 21 Claims



1. In an automatic record player, the combination of, a rotatable turntable, a centering spindle positioned at the center of said turntable, means defining a shelf on one side of said centering spindle on which said bottom stack of records may be seated during a playing cycle, automatic record playing means operative during an automatic cycle to deposit the bottom record of said stack onto said turntable, record sensing means including blade means mounted on said spindle and having an upper portion adapted to engage the edge of the centering hole of said bottom record seated on said shelf, and means operative during an automatic cycle for urging said upper portion of said blade means in the direction of said shelf with a sufficiently light force that said blade means is restrained by the edge of a record seated on said shelf without moving said record off of said shelf, said force being sufficient in the absence of a record on said shelf to move said blade means in said direction to a shut-off position.

4,376,306

FRAME-SYNCHRONIZING METHOD AND SYSTEM FOR RECOVERING SUPPLEMENTAL INFORMATION FROM SUPERMODULATED STREAM OF MULTILEVEL SYMBOLS

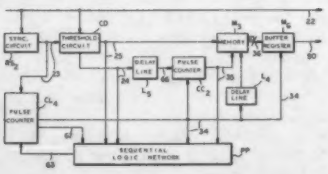
Pietro P. Giusto, Turin, Italy, assignor to CSELT Centro Studi e Laboratori Telecomunicazioni S.p.A., Turin, Italy

Filed Apr. 3, 1981, Ser. No. 250,706

Claims priority, application Italy, Apr. 4, 1980, 67530 A/80

Int. Cl.³ H04J *7/00*

U.S. Cl. 370—110.4 12 Claims



1. A method of recovering supplemental message signals at a receiving end of a transmission path from a composite stream of symbols represented by waveforms carrying primary information in the form of amplitude variations among a plurality of levels including two limiting levels and at least one intermediate level, said composite stream being organized at a transmitting end of said path in a recurrent outgoing frame of N symbol periods, said supplemental message signals being coded in a binary word of k bits superimposed in each outgoing frame upon an initial group of k modulable waveforms with amplitudes on at least one of said limiting levels, a modulable waveform carrying a "0" bit of said binary word being unaltered whereas a modulable waveform carrying a "1" bit is supermodulated with an amplitude beyond the limiting level thereof, the number k being substantially less than the number of probable modulable waveforms in a frame,

comprising the steps of:

(a) organizing the composite stream arriving at said receiving end in a recurrent incoming frame normally consisting of N symbol periods;

(b) detecting the modulable waveforms of said composite stream by comparison of their amplitudes with at least one predetermined threshold;

(c) counting the first k modulable waveforms in each incoming frame to establish a recovery interval followed by a redundancy interval;

(d) demodulating said first k modulable waveforms to produce a reconstituted binary word with "1" bits and "0" bits respectively derived from supermodulated and from unaltered modulable waveforms;

(e) counting the supermodulated waveforms occurring in at least a certain part of said redundancy interval of a succession of incoming frames;

(f) counting the supermodulated waveforms occurring in at least a certain part of said recovery interval of a succession of incoming frames;

(g) correlating the number of waveforms counted in step (e) with the number thereof counted in step (f) by comparing their ratio with a predetermined critical value indicative of a disalignment between outgoing and incoming frames; and

(h) upon ascertaining a surpassing of said critical value by said ratio in step (g), temporarily modifying the number of symbol periods of a current incoming frame to reduce such disalignment.

4,376,307

SEMICONDUCTOR LASER OR INTENSIFIER

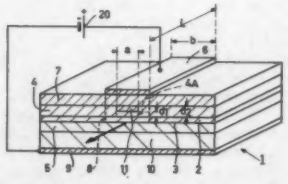
Tullio E. Rozzi, and Johannes H. C. Van Heuven, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 922,965, Jul. 10, 1978, abandoned. This application May 15, 1980, Ser. No. 150,270

Claims priority, application Netherlands, Jul. 12, 1977, 7707720

Int. Cl.³ H01S *3/19*

U.S. Cl. 372—45 11 Claims



1. A semiconductor device for operation with coherent electromagnetic radiation, comprising a semiconductor body having an active semiconductor layer which comprises a p-n junction and which is bounded on either side by first and second passive semiconductor layers having a lower refractive

index for said radiation than the active layer, means for supplying current to a strip-shaped region of the active layer in a direction substantially perpendicular to the layer, at least a selected one of said passive layers comprising a strip-shaped zone, the projection of said zone onto said strip-shaped region of the active layer extending fully within said strip-shaped region and said zone having a different structure from that of the adjacent parts of said selected passive layer, said strip-shaped zone having a width which is at most equal to that of said strip-shaped region of the active layer, the active layer having a substantially constant thickness, at least said selected passive layer comprising a first portion having a refractive index n_1 and a second portion having a refractive index n_2 different from n_1 for said radiation, said second portion having the same conductivity type as the first portion, the active layer adjoining said first portion at least within said strip-shaped zone, and said device satisfying the condition

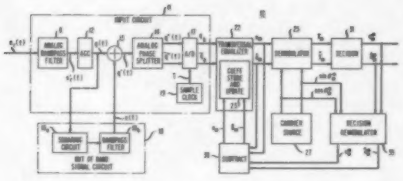
$(n_1-n_2)(d_1-d_2)>0$,

wherein d_1 is the thickness of that part of the first portion measured from the active layer to the closest part of the second portion within the strip-shaped zone, and d_2 is the thickness of the first portion in the region of said selected passive layer adjoining and outside the strip-shaped zone.

4,376,308
CONTROL OF COEFFICIENT DRIFT FOR FRACTIONALLY SPACED EQUALIZERS

Bruce E. McNair, Holmdel, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Apr. 1, 1981, Ser. No. 249,893
Int. Cl.³ H04L *25/03*
U.S. Cl. 375—14 **40 Claims**



21. A method for processing a received data signal, said data signal representing a succession of data signal values occurring at T second intervals, said method comprising the steps of

forming a sampled signal comprised of a succession of samples occurring at a predetermined rate of p/T samples per second, $p>1$, said sampled signal being comprised in the frequency domain of periodic replicas of said data signal distributed in a first plurality of frequency bands and of additional energy derived from said data signal and distributed at frequencies intermediate said frequency bands,

equalizing said sampled signal, and

repetitively updating the response of said equalizing means.

4,376,309
METHOD AND APPARATUS FOR SIGNAL-EYE TRACKING IN DIGITAL TRANSMISSION SYSTEMS

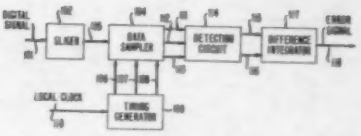
Gerald L. Fenderson, Newton, and Mitchell A. Skinner, Seabrook, both of N.H., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed May 29, 1981, Ser. No. 268,274
Int. Cl.³ H04L *7/04*
U.S. Cl. 375—101 **14 Claims**

1. Apparatus for use in a digital transmission system wherein the digital signal has n signal levels which form n−1 aligned signal-eyes, where n has an integer value of at least 2, said apparatus characterized by

means (e.g., **102, 104, 109**) for forming first samples, regeneration samples and second samples of the digital signal, each regeneration sample is formed at a regeneration sampling time which occurs within said signal-eyes, each of said first samples is formed at a first sampling time which precedes said signal-eyes and one of said regeneration samples, each of said second samples is formed at a second sampling time which succeeds said signal-eyes and said one of said regeneration samples, each of said first, regeneration and second samples having an amplitude that represents the amplitude of the digital signal at the respective sampling time relative to a reference level which passes through one of said signal-eyes,

detection circuit means (e.g., **604, 605, 607**) for comparing the amplitude of each of said first samples with the amplitude of said one of said regeneration samples and generating a first comparison signal therefrom,



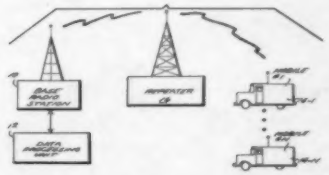
detection circuit means (e.g., **605, 606, 608**) for comparing the amplitude of each of said second samples with the amplitude of said one of said regeneration samples and generating a second comparison signal therefrom, said first and second comparison signals having a difference therebetween, and

means (e.g., **117**) for averaging the difference between said first and second comparison signals to form an error signal which varies with the movement of said signal-eyes relative to said regeneration sampling time.

4,376,310
MOBILE DATA TERMINAL CHANNEL BUSY ARRANGEMENT

Bill L. Stackhouse, and Theodore E. Taylor, both of Lynchburg, Va., assignors to General Electric Company, Lynchburg, Va.

Filed May 13, 1981, Ser. No. 263,205
Int. Cl.³ H04Q *7/04*
U.S. Cl. 375—104 **9 Claims**



1. An arrangement, for use with a data terminal capable of transmitting or receiving a digital data message including a data synchronizing signal, for determining the busy/free status of a radio channel, comprising:

a radio receiver providing (a) a demodulated audio signal and (b) a carrier activated switch (CAS) signal indicating the presence of a carrier signal or noise on the radio channel;

a SYNC detector, for generating, in response to said demodulated audio signal, a SYNC signal whenever said demodulated audio signal includes said data synchronizing signal;

a pulse generator, for generating, in response to said CAS signal, a CAS pulse having a predetermined duration; and

logic OR function means for generating a channel busy signal responsive to the presence of either said SYNC signal or said CAS pulse, said channel busy signal for

inhibiting transmission of a data message by said data terminal.

4,376,311

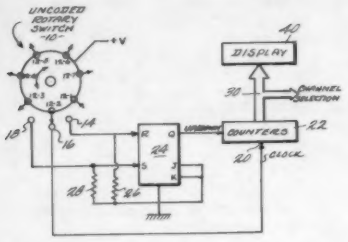
ELECTRO-MECHANICAL SWITCHING SYSTEM

Ronald R. Conger, Binghamton, N.Y., assignor to General Electric Company, Lynchburg, Va.

Filed Jul. 28, 1981, Ser. No. 287,779

Int. Cl.³ H04B *1/26;* H03K *21/36*

U.S. Cl. 455—158 **6 Claims**



1. An electro-mechanical selection system, comprising:

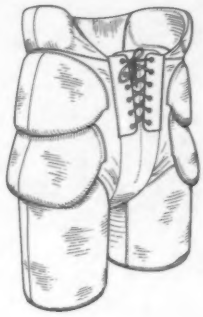
a rotary switch having an integer number N of movable terminals electrically coupled with one another and N discrete angular positions and first, second and third stationary terminals, the movable and stationary terminals being positioned and spaced so that by rotating the switch clockwise from one discrete angular position to the next discrete angular position, a movable terminal makes electrical contact with the first stationary terminal then another movable terminal makes electrical contact with the third stationary terminal before any movable terminal makes electrical contact with the second stationary terminal; and by rotating the switch counterclockwise, a movable terminal makes electrical contact with the third stationary terminal then a different movable terminal makes electrical contact with the first stationary terminal before any movable terminal makes electrical contact with the second stationary terminal;

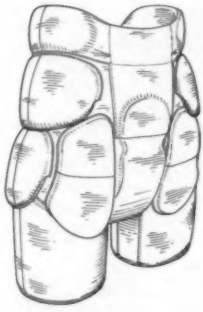
means for coupling a signal to all of the movable terminals;

a memory element coupled to the first and third stationary terminals for memorizing which of the first or third stationary terminals was contacted last before the second stationary terminal was contacted by a movable terminal; and

an up/down counter having an up/down input for controlling whether the counter counts up or down coupled to an output of the memory element and a clock input coupled to the second stationary contact for receiving a clock signal from the second stationary contact after an up/-down selection thereof was determined by the memory element, whereby the counter counts in one direction (up or down) when the switch is rotated clockwise and counts in the other direction (down or up) when the switch is rotated counter-clockwise.

268,142
PROTECTIVE GARMENT FOR AN ICE HOCKEY PLAYER
John Livernois, St. Jean, Canada, assignor to Canada Cycle and Motor Company Limited, Weston, Canada
Filed Oct. 21, 1980, Ser. No. 198,907
Claims priority, application Canada, Apr. 25, 1980, 25-04-80-8
Term of patent 14 years
Int. Cl. D2—*02*
U.S. Cl. D2—27



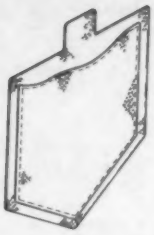


268,143
WOMEN'S JEAN
Ruth A. Hattori, 531 Josephine, Denver, Colo. 80206
Filed Apr. 7, 1980, Ser. No. 137,794
Term of patent 14 years
Int. Cl. D2—*02*
U.S. Cl. D2—28

268,144
FISHING BOOT
John Bork, Jr., 6052 Willowgrove La., Cupertino, Calif. 95014
Filed Aug. 1, 1980, Ser. No. 174,725
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—275

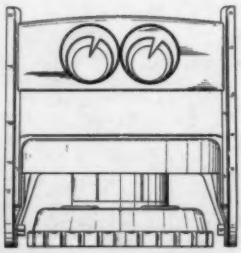
268,145
SHOE SOLE UNIT
Alexander C. Daswick, 700 Orange Grove, Apt. 210, South Pasadena, Calif. 91030
Filed Aug. 22, 1980, Ser. No. 180,508
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—319

268,146
NOVELTY BAG FOR HOLDING SMALL GIFTS
Elaine A. Rock, 96 Old Country Rd., Melville, N.Y. 11746
Filed Mar. 3, 1980, Ser. No. 126,399
Term of patent 14 years
Int. Cl. D3—*99*
U.S. Cl. D3—60

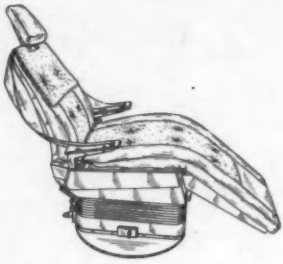


268,147
PAINT ROLLER
Kiyoshi Hori, Osaka, Japan, assignor to Nippon Paint Co., Ltd., Osaka, Japan
Filed Apr. 8, 1980, Ser. No. 252,014
Term of patent 14 years
Int. Cl. D4—*04*
U.S. Cl. D4—38.1

268,148
COMBINATION CHAIR AND STEPSTOOL
Mel Appel, Nine Nottingham Rd., Livingston, N.J. 07039, and George Kress, Scotch Plains, N.J., assignors to Mel Appel, Livingston, N.J.
Filed Sep. 4, 1980, Ser. No. 184,223
Term of patent 14 years
Int. Cl. D6—*99*
U.S. Cl. D6—4

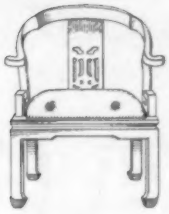


268,149
DENTAL CHAIR
Robert Case, Chicago, Ill., assignor to Syntex (U.S.A.) Inc., Palo Alto, Calif.
Filed Dec. 29, 1980, Ser. No. 220,577
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—22

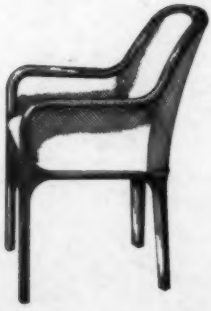


268,150
SUPPORT STAND FOR ELECTRONIC EQUIPMENT
Charles Hauser, and Sharon Johnson, both of Atlanta, Ga., assignors to The Central Trust Company, N.A., Cincinnati, Ohio
Filed Sep. 22, 1980, Ser. No. 189,690
Term of patent 14 years
Int. Cl. D06—*06*
U.S. Cl. D6—25

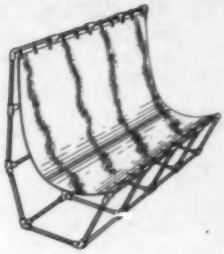
268,151
CHAIR
Mike T. Claman, New York, N.Y., assignor to Lewittes Furniture Enterprises, Inc., New York, N.Y.
Filed Aug. 28, 1980, Ser. No. 182,065
Term of patent 3½ years
Int. Cl. D6—*01*
U.S. Cl. D6—68



268,152
ARM CHAIR
Karl Rausch, Im Rosengartle 15, 7500 Karlsruhe-Durlach, Fed. Rep. of Germany
Filed Jul. 11, 1980, Ser. No. 167,528
Claims priority, application Fed. Rep. of Germany, Jan. 11, 1980, MR VIII/133
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—71

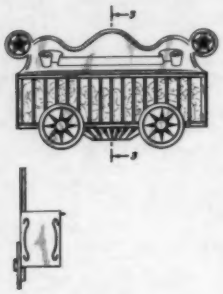


268,153
SEAT
Gene D. Arnold, 20776 Dunbar Dr., Cupertino, Calif. 95014, and Douglas A. Arnold, 588 Manzanita, Sunnyvale, Calif. 94086
Filed Nov. 23, 1979, Ser. No. 96,843
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—75



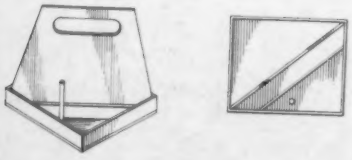
268,154
DISPENSER FOR SOAP PRODUCTS
John R. Frassanito, San Antonio, Tex., assignor to Sani-Fresh International, Inc., San Antonio, Tex.
Filed Dec. 10, 1980, Ser. No. 214,966
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D6—95

268,155
WALL MOUNTED HOLDER FOR STUFFED TOY ANIMALS
Gary Sumner, 6804 Bix Ave., Citrus Heights, Calif. 95610
Filed Aug. 5, 1980, Ser. No. 175,665
Term of patent 14 years
Int. Cl. D06—*04*
U.S. Cl. D6—127

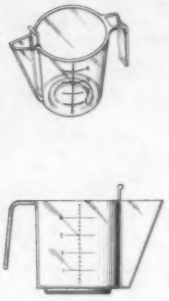


268,156
SHELF SUPPORT BRACKET
Mel Rycus, Orchard Lake, Mich., assignor to Glass & Mirror Craft Industries, Inc., Detroit, Mich.
Filed May 8, 1980, Ser. No. 147,793
Term of patent 14 years
Int. Cl. D06—*06*
U.S. Cl. D6—191

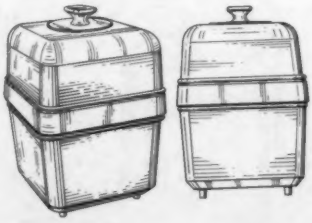
268,157
PRE-FLIGHT BUTLER TRAY
Charles H. Campton, 525 Delaware Ave., Palmerton, Pa. 18071
Filed Sep. 5, 1980, Ser. No. 184,625
Term of patent 14 years
Int. Cl. D07—*99*
U.S. Cl. D7—19



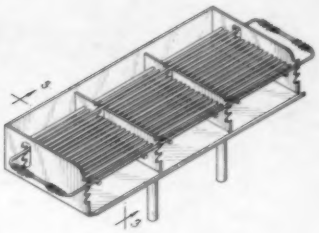
268,158
COMBINED SEPARATOR, STRAINER AND MEASURING CUP
John S. Doyel, 404 W. 20th St., New York, N.Y. 10011
Filed Mar. 18, 1981, Ser. No. 245,066
Term of patent 14 years
Int. Cl. D07—*04*; D10—*04*
U.S. Cl. D7—50



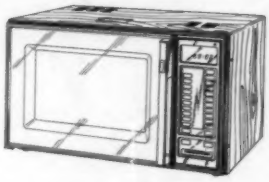
268,159
BAKING APPLIANCE
Peter M. Fox, West Bend, Wis., assignor to Dart Industries Inc., Northbrook, Ill.
Filed Dec. 15, 1980, Ser. No. 216,053
Term of patent 14 years
Int. Cl. D07—*02*
U.S. Cl. D7—354



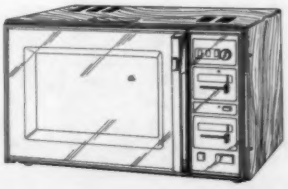
268,160
COOKING GRILL
Frank W. Beller, Aurora, Ill., assignor to Belson Manufacturing Co., Inc., Aurora, Ill.
Filed Dec. 16, 1980, Ser. No. 216,659
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—332



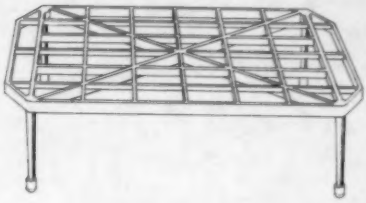
268,161
MICROWAVE OVEN
Masamichi Yamamura, Osaka, and Toshio Harada, Nara, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Nov. 19, 1980, Ser. No. 208,460
Claims priority, application Japan, May 20, 1980, 55-19948
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—351



268,162
MICROWAVE OVEN
Masamichi Yamamura, Osaka, and Toshio Harada, Nara, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Nov. 19, 1980, Ser. No. 208,461
Claims priority, application Japan, May 20, 1980, 55-19947
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—351

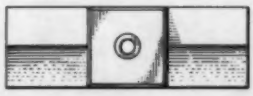


268,163
MICROWAVE MEAL RACK
Larry J. Hansen, 1733 S. Fawcett, Tacoma, Wash. 98402
Filed Feb. 9, 1979, Ser. No. 10,759
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—409

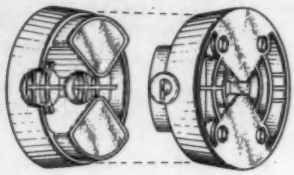


268,164
JAR LID OPENER
Robert R. Sandberg, P.O. Box 232, Prineville, Oreg. 97754
Filed Oct. 20, 1980, Ser. No. 198,877
Term of patent 14 years
Int. Cl. D07—*99*
U.S. Cl. D8—40

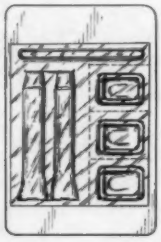
268,165
DRILL GUIDE
Reino L. Perry, 6322 Bass Lake Rd., Crystal, Minn. 55428, and Earl A. Schule, Inger Rte., Deer River, Minn. 56636
Filed Oct. 20, 1980, Ser. No. 199,088
Term of patent 14 years
Int. Cl. D8—*01*; D15—*09*
U.S. Cl. D8—70



268,166
LOCKING APPARATUS FOR SNOW SKIS AND THE LIKE
Ronald A. Smith, Los Gatos, and Johan R. P. Goudberg, San Jose, both of Calif., assignors to Apres Ski Partnership, San Jose, Calif.
Filed Oct. 20, 1980, Ser. No. 198,963
Term of patent 14 years
Int. Cl. D8—*07*
U.S. Cl. D8—331



268,167
PACKAGING CONTAINER
Arnold B. Fox, Skokie, Ill., assignor to Felt Products Mfg. Co., Skokie, Ill.
Filed Feb. 5, 1981, Ser. No. 231,607
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—415

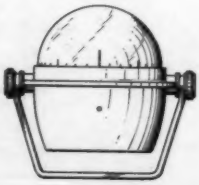


268,168
CHRONOMETER
Ernest Schneider, Grenchen, Switzerland, assignor to Montres Sicura S.A., Switzerland
Filed Nov. 10, 1980, Ser. No. 205,800
Claims priority, application Hague, May 12, 1980, DM/000183
Term of patent 14 years
Int. Cl. D10—*02*
U.S. Cl. D10—30

268,169
SCOREKEEPING DEVICE
Louis J. DeChristopher, 69-511 Iberia Ct., Rancho Mirage, Calif. 92270
Filed Sep. 19, 1980, Ser. No. 188,759
Term of patent 14 years
Int. Cl. D10—*99*
U.S. Cl. D10—46.1

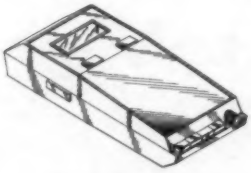
268,170
LOG SIZING ATTACHMENT FOR CHAINSAWS
Jon A. Youngblom, R.R. 2, Hinckley, Minn. 55037
Filed Jan. 19, 1981, Ser. No. 226,134
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—64

268,171
COMPASS
William Macowski, Caldwell, N.J., assignor to Ketchem & McDougall, Inc., Roseland, N.J.
Filed Nov. 13, 1980, Ser. No. 206,517
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—68



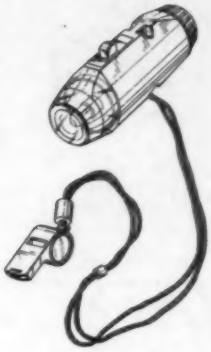
268,172
ENGINE TESTER
Viktor V. Chirkov, r.p. Krasnoobsk, 3, kv. 11, Novosibirskaya oblast, Novosibirsky raion, and Alexandr V. Lyapunov, ulitsa Sibiryakov-Gvardeitsev, 1, kv. 41, Novosibirsk, both of U.S.S.R.
Filed May 21, 1980, Ser. No. 152,030
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—78

268,173
CALIBRATOR FOR TWO WIRE TRANSMITTERS
Robert A. Guetschow, Minnetonka, and Daniel J. Durdin, Richfield, both of Minn., assignors to Rosemount Inc., Eden Prairie, Minn.
Filed Oct. 6, 1980, Ser. No. 194,608
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—78



268,174
ELECTRONIC ENGINE ANALYZER
William M. Noe, San Jose, Calif., assignor to Sun Electric Corporation, Crystal Lake, Ill.
Filed Oct. 15, 1980, Ser. No. 197,247
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—78

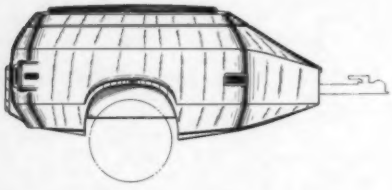
268,175
COMBINED FLASHING LIGHT AND WHISTLE
Chan M. Kong, 58 Pau Chung St., Tokwawan, Kowloon, Hong Kong
Filed Aug. 25, 1980, Ser. No. 180,872
Claims priority, application United Kingdom, May 23, 1980, 995 004
Term of patent 14 years
Int. Cl. D10—*06*; D26—*02*
U.S. Cl. D10—114



268,176
ORNAMENT
George C. Sun, 530 Rhode Island Ave., Cherry Hill, N.J. 08002
Continuation of Ser. No. 873,092, Jan. 27, 1978, Pat. No. Des. 253,998. This application May 2, 1979, Ser. No. 35,249
Term of patent 14 years
Int. Cl. D11—*05*
U.S. Cl. D11—129

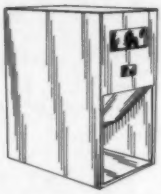
268,177
FIGURINE OF A DOBERMAN PINSCHER PUP
Jesus A. C. Santa-Eulalia, and Javier B. C. Santa-Eulalia, both of Montevideo, Uruguay, assignors to John J. Madison Co., Inc., Laguna Hills, Calif.
Filed May 29, 1980, Ser. No. 154,325
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D11—158

268,178
TRAILER BODY
Donald J. Reid, Plymouth, Mich., assignor to Kelsey-Hayes Co., Romulus, Mich.
Filed Sep. 19, 1980, Ser. No. 188,450
Term of patent 14 years
Int. Cl. D12—*10*
U.S. Cl. D12—102

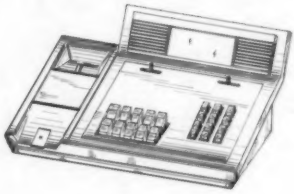


268,179
VEHICLE WHEEL
Wolfgang E. F. Benke, Frankfurt, Fed. Rep. of Germany, assignor to Centra Leichtmetall-Räder GmbH, Hassloch, Fed. Rep. of Germany
Filed Dec. 5, 1980, Ser. No. 213,628
Claims priority, application Fed. Rep. of Germany, Jun. 9, 1980, 7 AR 290/80
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—211

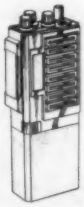
268,180
LOUDSPEAKER CABINET
Robert J. Leo, 126 Sand Rd., North Syracuse, N.Y. 13212
Filed Sep. 13, 1979, Ser. No. 74,966
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D14—33



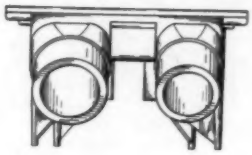
268,181
TELEPHONE BASE
Ronald C. Banko, North Wales, Pa., assignor to Stromberg-Carlson Corporation, Orlando, Fla.
Filed Jan. 14, 1980, Ser. No. 111,699
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—60



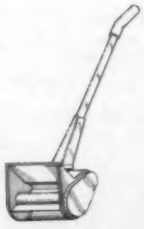
268,182
HAND HELD RADIO TRANSCEIVER OR SIMILAR ARTICLE
Masakatsu Asano, and Shigeru Neza, both of Kawasaki, Japan, assignors to The General Corporation, Japan
Filed Nov. 12, 1980, Ser. No. 206,034
Claims priority, application Japan, May 24, 1980, 55-20522
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—68



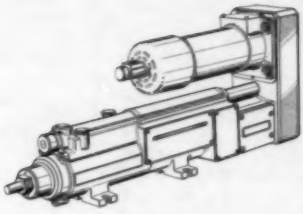
268,183
PUMP FOR AUTOMATIC WASHER OR SIMILAR ARTICLE
William Ohmann, and Gerald L. Kretchman, both of St. Joseph, Mich., assignors to Whirlpool Corporation, Benton Harbor, Mich.
Filed Jul. 1, 1980, Ser. No. 165,134
Term of patent 14 years
Int. Cl. D15—*02*
U.S. Cl. D15—7



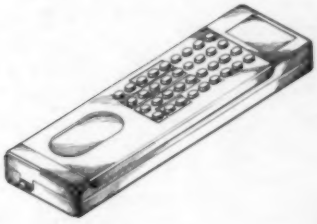
268,184
SNOW THROWER
John M. Berner, 4927 St. Croix Ave., Minneapolis, Minn. 55422
Filed Apr. 23, 1979, Ser. No. 32,351
Term of patent 14 years
Int. Cl. D08—*05*
U.S. Cl. D15—12



268,185
DRILLING MACHINE
Noboru Hirose, and Yoshinari Mori, both of Nagoya, Japan, assignors to Brother Industries, Ltd., Nagoya, Japan
Filed Mar. 24, 1980, Ser. No. 133,509
Claims priority, application Japan, Oct. 1, 1979, 54-41311
Term of patent 14 years
Int. Cl. D15—*09*
U.S. Cl. D15—132



268,186
HORSE RACE ANALYZER OR SIMILAR ARTICLE
Evan W. Mandel, Rye, N.Y., and Edward Mayer, Los Angeles, Calif., assignors to Mattel, Inc., Hawthorne, Calif.
Filed Nov. 4, 1980, Ser. No. 203,931
Term of patent 14 years
Int. Cl. D18—*01*
U.S. Cl. D18—7

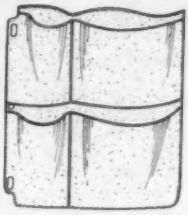


268,187
ROTARY STAMP
Tatsuro Funahashi, Komaki, Japan, assignor to Shachihata Industrial Co., Ltd., Nagoya, Japan
Filed Sep. 4, 1980, Ser. No. 184,222
Term of patent 14 years
Int. Cl. D19—*02*
U.S. Cl. D18—15

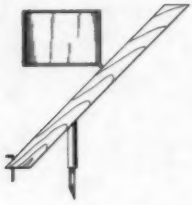
268,188
CALENDAR
Milka Vlahovic, Campbell Rd., P.O. Box 55, Pennsburg, Pa. 18073
Filed Dec. 12, 1980, Ser. No. 215,575
Term of patent 14 years
Int. Cl. D19—*03*
U.S. Cl. D19—25

268,189
PULL RING FOR USE WITH POST BINDING MECHANISM
Edward Podosek, Wilbraham, and Arthur Lozeau, Belchertown, both of Mass., assignors to Dennison National Company, Holyoke, Mass.
Filed Nov. 10, 1980, Ser. No. 205,760
Term of patent 14 years
Int. Cl. D19—*04*
U.S. Cl. D19—32

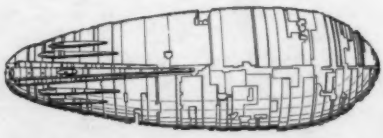
268,190
TRANSPARENT LOOSELEAF PAGE FOR STORING FLEXIBLE, MAGNETIC COMPUTER DISCS
Richard Nast, 309 Whippoorwill La., Brentwood, Tenn. 37027
Filed May 1, 1980, Ser. No. 145,668
Term of patent 14 years
Int. Cl. D19—*04*
U.S. Cl. D19—33



268,191
OUTDOOR SIGN
Russell Faxon, Bell Buckle, Tenn., assignor to Landquest Realty Company, Shelbyville, Tenn.
Filed Feb. 9, 1981, Ser. No. 232,727
Term of patent 14 years
Int. Cl. D20—*03*
U.S. Cl. D20—41

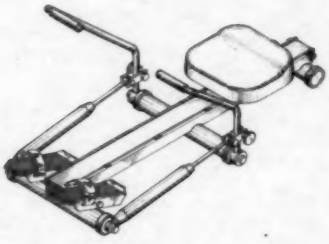


268,192
TOY SPACE VEHICLE
George W. Lucas, Jr., San Anselmo, and Joseph E. Johnston, San Rafael, both of Calif., assignors to Lucasfilm, Ltd., San Rafael, Calif.
Filed Apr. 18, 1980, Ser. No. 141,591
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—87



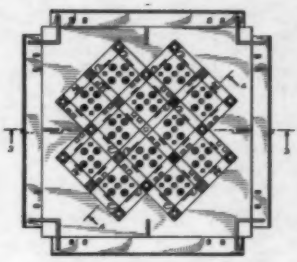
268,193
TOY ANIMAL
Shinroku Nakao , Yokohama; Yoshiyasu Ishii, and Masako Mizugami, both of Tokyo, all of Japan, assignors to Combi Co., Ltd., Tokyo, Japan
Filed Apr. 24, 1980, Ser. No. 143,254
Claims priority, application Japan, Nov. 13, 1979, 54-47501
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—159

268,194
ROWING MACHINE
David B. Smith, P.O. Box 1280, Bellevue, Wash. 98009
Filed Apr. 13, 1981, Ser. No. 253,785
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D21—195

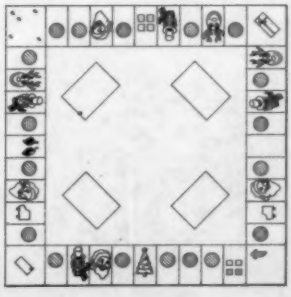


268,195
LIGHT FOR A ROLLER SKATE WHEEL
David Kalish, 26 Westminister Ave., Venice, Los Angeles County, Calif. 90291
Filed May 19, 1980, Ser. No. 150,988
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D21—226

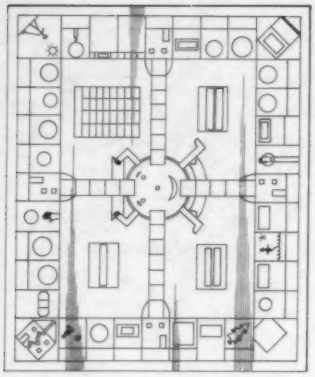
268,196
SKILL AND CHANCE GAME BOARD
Raymond C. Piacentino, 39 Cypress Rd., Dumont, N.J. 07628
Filed Feb. 11, 1980, Ser. No. 120,552
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—17



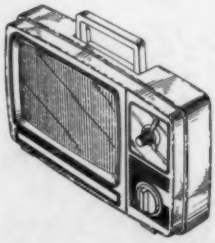
268,197
GAME BOARD
Fred Gosman, 1301 E. Chateau, Milwaukee, Wis. 53217
Filed Sep. 22, 1980, Ser. No. 189,794
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—26



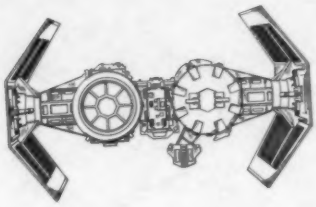
268,198
GAME BOARD
William D. Smith, 7186 Rickmeyer Rd., Rome, N.Y. 13440
Filed Dec. 7, 1979, Ser. No. 101,529
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—30



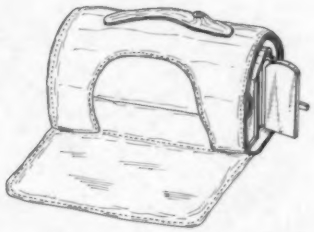
268,199
MUSICAL TOY TELEVISION
Ken K. Shimasaki, Hong Kong, Hong Kong, assignor to Unimax Industries, Limited, Kowloon, Hong Kong
Filed Apr. 14, 1980, Ser. No. 140,134
Claims priority, application United Kingdom, Nov. 20, 1979, 79/992463
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—64



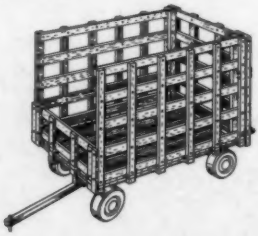
268,200
TOY SPACE VEHICLE
George W. Lucas, Jr., San Anselmo, and Joseph E. Johnston, San Rafael, both of Calif., assignors to Lucasfilm Ltd., San Rafael, Calif.
Filed Apr. 18, 1980, Ser. No. 141,594
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—87



268,201
COMBINED TOY BUILDING AND CARRYING CASE
Craig J. McElhaney, Holland, N.Y., assignor to The Quaker Oats Company, Chicago, Ill.
Filed Jan. 4, 1980, Ser. No. 109,622
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—114

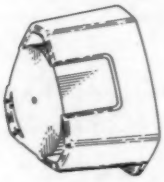


268,202
TOY HAY WAGON
Carl T. Corl, 109 Woodsdale Trailer Park, State College, Pa. 16801
Filed Nov. 23, 1979, Ser. No. 96,780
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—134



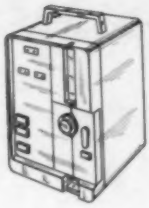
268,203
DETACHABLE RECEIVER SIGHT
Charles P. Woodham, 7548 Hazelnut La., Sacramento, Calif. 95828
Filed Sep. 18, 1980, Ser. No. 188,874
Term of patent 14 years
Int. Cl. D22—*01*
U.S. Cl. D22—8

268,204
SPRAYER NOZZLE OR SIMILAR ARTICLE
Walter H. Wesner, Plantation; Richard P. Garneau, Davie; John F. Barrett, Miami, and Anthony Licari, Cooper City, all of Fla., assignors to AFA Consolidated Corporation, Hialeah, Fla.
Filed Jul. 31, 1980, Ser. No. 174,092
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—34



268,205
SHOWER HEAD
Lewis L. Smith, 171 Shadywood La., Elk Grove Village, Ill. 60007
Filed Jun. 4, 1981, Ser. No. 270,379
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—35

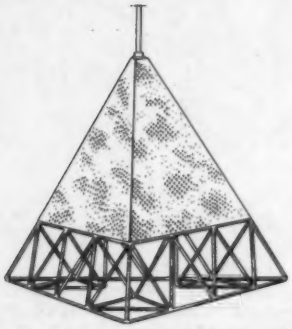
268,206
MEDICAL INFUSION PUMP
Mikio Kosako, Osaka, Japan, assignor to Sharp Corporation, Osaka, Japan
Filed Sep. 30, 1980, Ser. No. 192,536
Claims priority, application Japan, Apr. 18, 1980, 15454
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—08



268,207
SURGICAL FORCEPS OR SIMILAR ARTICLE
John A. Tartaglia, 108 Stoddard Rd., Waterbury, Conn. 06705
Filed Sep. 22, 1980, Ser. No. 189,693
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—27

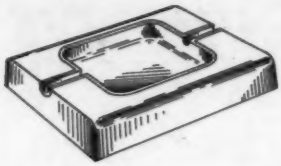
268,208
POST OPERATIVE SURGICAL BINDER/SURGICAL DRESSING FABRIC OF THE PLAIN BACK TYPE
Tate H. Brown, P.O. Box 206, Lewisburg, W. Va. 24901
Filed Oct. 3, 1980, Ser. No. 193,478
Term of patent 14 years
Int. Cl. D24—*04*; D5—*05*
U.S. Cl. D24—49

268,209
SWAG LAMP
John Reistetter, and Bart Russo, both of Los Angeles, Calif., assignors to Simmons Universal Corporation, New York, N.Y.
Filed Jan. 23, 1981, Ser. No. 228,024
Term of patent 14 years
Int. Cl. D26—*05*
U.S. Cl. D26—85



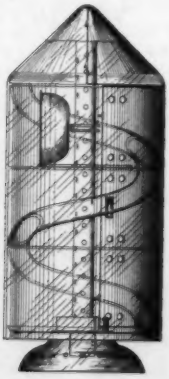
268,210
BOTTLE LAMP
Harlan S. Leeds, 3667 Northhaven, Dallas, Tex. 75221
Filed Feb. 28, 1980, Ser. No. 125,553
Term of patent 14 years
Int. Cl. D26—*05*
U.S. Cl. D26—94

268,211
ASHTRAY
Marian H. Polhemus, Chicago, Ill., assignor to Tenex Corporation, Elk Grove Village, Ill.
Filed Feb. 22, 1980, Ser. No. 123,673
Term of patent 14 years
Int. Cl. D27—*03*
U.S. Cl. D27—29



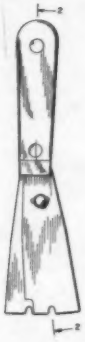
268,212
LUMINAIRE BALLAST HOUSING
Clifford M. Laughter, Hendersonville, N.C., assignor to General Electric Company, Schenectady, N.Y.
Filed Jul. 23, 1980, Ser. No. 171,488
Term of patent 14 years
Int. Cl. D26—*99*
U.S. Cl. D26—142

268,213
PET HABITAT
Robert O. Lovitt, 1500 Warren La., Fort Worth, Tex. 76112
Filed Dec. 8, 1980, Ser. No. 214,331
Term of patent 14 years
Int. Cl. D30—*02*
U.S. Cl. D30—1

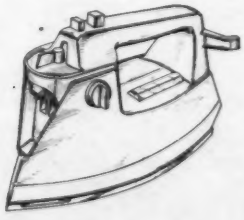


268,214
DOG HURDLE
Robert B. Koenig, 10714 Royal Springs Dr., Dallas, Tex. 75229
Filed Feb. 19, 1980, Ser. No. 122,128
Term of patent 14 years
Int. Cl. D30—*99*
U.S. Cl. D30—42

268,215
ADJUSTABLE ROD SCRAPER FOR RACK OR GRILLE
Thomas D. McBride, 559 Chestnut St., Westwood, N.J. 07675
Filed Mar. 25, 1980, Ser. No. 133,876
Term of patent 14 years
Int. Cl. D7—*05*
U.S. Cl. D32—49



268,216
ELECTRIC PRESSING IRON
Monte L. Levin, New York, N.Y., assignor to Scovill Inc., Waterbury, Conn.
Filed Dec. 5, 1980, Ser. No. 213,384
Term of patent 14 years
Int. Cl. D7—*05*
U.S. Cl. D32—70



268,217
WOVEN CLOTH BASKET
S. Marie Stevens, P.O. Box 95, Ephraim, Utah 84627
Filed Oct. 2, 1980, Ser. No. 193,102
Term of patent 14 years
Int. Cl. D9—*04*
U.S. Cl. D34—42

268,218
WALL COVERING
Armelle Theriez, Noyelle Vion, France, assignor to Peintures Corona S.A., Valenciennes, France
Filed Nov. 10, 1980, Ser. No. 205,643
Claims priority, application France, Sep. 5, 1980, 801516
Term of patent 14 years
Int. Cl. D5—*06*
U.S. Cl. D92—25

268,219

COIN HOLDER

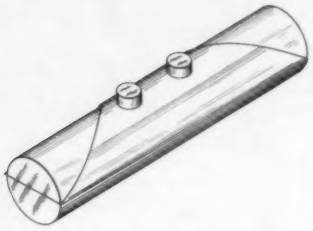
Andrew E. Janetos, Broadway Extension, P.O. Box 340, Dover, N.H. 03820

Filed Sep. 24, 1980, Ser. No. 190,480

Term of patent 14 years

Int. Cl. D99—*00*

U.S. Cl. D99—34



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 8TH DAY OF MARCH, 1983

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A. O. Smith Harvestore Products, Inc.: *See*—
Kalnins, Lauris, 4,375,784, Cl. 99-646.00S.

Abiko, Ichimatsu: *See*—
Kotani, Shintaro; Abiko, Ichimatsu; Tokunaga, Yukio; and Tateishi, Kazuyoshi, 4,376,282, Cl. 346-107.00R.

ACF Industries, Incorporated: *See*—
Hammonds, James C., 4,375,894, Cl. 280-433.000.

Acushnet Company: *See*—
Lynch, Francis deS.; Reid, Walter L., Jr.; and Jepson, John W., 4,375,887, Cl. 273-32.00H.

Aerpat A.G.: *See*—
Savage, Donald S.; and Lacey, Raymond D., 4,375,760, Cl. 72-391.000.

Agarwal, Pawan K.; and Lundberg, Robert D., to Exxon Research and Engineering Co. Hot melt adhesive compositions. 4,376,179, Cl. 524-65.000.

Agfa-Gevaert AG: *See*—
Haseler, Helmut, 4,376,216, Cl. 564-438.000.

AGL Corporation: *See*—
Hogan, William M., 4,375,763, Cl. 73-40.50R.

Airwick Industries, Inc.: *See*—
Posten, Robert J., 4,376,175, Cl. 523-501.000.

Aisin Seiki Kabushiki Kaisha: *See*—
Ishizaki, Yoshihiro, 4,375,749, Cl. 62-6.000.

Ajinomoto Co., Ltd.: *See*—
Eguchi, Hajime; Furukawa, Hideko; and Kawakita, Tetsuya, 4,376,132, Cl. 426-537.000.

Aktiebolaget Electrolux: *See*—
Blomberg, Peter E., 4,375,750, Cl. 62-101.000.

A.G. fur Industrielle Elektronik AGIE: *See*—
Fricker, Paul, 4,376,241, Cl. 219-69.00W.

Alberti, John, to Boeing Company, The. Powered cargo restraint. 4,375,932, Cl. 410-69.000.

Alberts, Heinrich; Friemann, Hans; Moretto, Hans-Heinrich; and Sattlegger, Hans, to Bayer Aktiengesellschaft. Organo-polysiloxane-polyester-vinyl graft copolymers. 4,376,185, Cl. 525-29.000.

Aldridge, Lester R.: *See*—
Stevens, Barry N.; and Aldridge, Lester R., 4,375,992, Cl. 134-25.400.

Alexander, Fred D.: *See*—
Kurimsky, Roger A.; Alexander, Fred D.; and Holzkopf, Michael E., 4,375,862, Cl. 220-293.000.

Alfa-Laval AB: *See*—
Bodelson, Berth I. A., 4,375,870, Cl. 494-40.000.
Ehnstrom, Lars K. J., 4,376,163, Cl. 435-162.000.

Alferness, Rodney C.; and Kaminow, Ivan P., to Bell Telephone Laboratories, Incorporated. Optical waveguides in InGaAsP and InP. 4,376,138, Cl. 427-160.000.

Allen-Bradley Company: *See*—
Long, Eric L.; Fillus, Gary C.; and Paape, Kenneth L., 4,376,239, Cl. 200-159.00B.

Allen, James A., to Armstrong World Industries, Inc. Method for finishing fiberboard utilizing a frothed prime coat. 4,376,142, Cl. 427-393.000.

Allied Corporation: *See*—
Forgione, Peter S.; and Henderson, William A., Jr., 4,375,972, Cl. 436-531.000.
Khattab, Ghazi M. A., 4,376,188, Cl. 525-183.000.

Allied Transportation Specialties, Inc.: *See*—
Malec, Jerry P., 4,375,788, Cl. 116-34.00R.

Allis-Chalmers Corporation: *See*—
Feller, Thomas R., 4,375,926, Cl. 403-15.000.

Allmendinger, James M.: *See*—
Amsdill, Mark F.; Allmendinger, James M.; and Lender, Harry, 4,375,757, Cl. 62-354.000.

Alpha-Omega Development, Inc.: *See*—
Hanlet, Jacques M., 4,376,256, Cl. 313-210.000.

Ambic Group Limited: *See*—
Bullock, George P.; and Marshall, Barry R., 4,376,053, Cl. 210-767.000.

American Cyanamid Company: *See*—
Duzza, John P.; Joseph, Joseph P.; and Bernstein, Seymour, 4,376,122, Cl. 424-270.000.
Shah, Hemant D.; and Edzenga, Laurence, 4,375,858, Cl. 215-217.000.

American Home Products Corporation: *See*—
Carlson, Richard P.; Fenichel, Richard L.; Lewis, Alan J.; and Wolf, Milton, 4,376,124, Cl. 424-308.000.

Amin, Kamal E., to Bendix Corporation, The. Alternate method for inducing superplastic properties in nonsuperplastic metal and alloy powders. 4,375,994, Cl. 148-11.50P.

Amsdill, Mark F.; Allmendinger, James M.; and Lender, Harry, to Stoll, William A.; and Moosbrugger, William J., part interest to each. Inlet water temperature control for ice making machine. 4,375,757, Cl. 62-354.000.

Anderson Bros. Mfg. Co.: *See*—
Stohlquist, Roger H.; and Brown, Jonathan G., 4,375,826, Cl. 141-137.000.

Anderson, Jared A.; Van Gelder, Robert V.; Yazolino, Lauren F.; and Braun, Jimmy E., to Signetics Corporation. Virtual memory addressing device. 4,376,297, Cl. 364-200.000.

Andersson, Clarence A.: *See*—
Bratton, Raymond J.; and Andersson, Clarence A., 4,376,004, Cl. 156-99.000.

Andersson, Torsten; and Jeppsson, Bengt, to PLM Aktiebolag. Method for the manufacture of containers. 4,376,024, Cl. 204-181.00R.

Ando, Otaro: *See*—
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Andrews, James D., to Electrodrill, Inc. Method of and apparatus for cutting narrow grooves. 4,376,020, Cl. 204-129.500.

Andrus, James E.; and Haag, Kenneth W., to RCA Corporation. Apparatus for electrophoretic deposition. 4,376,031, Cl. 204-299.0EC.

Angelo, Raymond W.; and Bakos, Peter, to International Business Machines Corporation. Etchant composition and use thereof. 4,376,057, Cl. 252-79.400.

Anschutz & Co., GmbH: *See*—
Bey, Ulf; Lassig, Martin; and Stotzer, Hermann, 4,375,726, Cl. 33-324.000.

Aoshima, Atsushi: *See*—
Murofushi, Toshiaki; and Aoshima, Atsushi, 4,376,219, Cl. 568-697.000.

Arai, Masatoshi: *See*—
Takago, Toshio; Arai, Masatoshi; Inoue, Takeo; and Terashima, Masami, 4,376,192, Cl. 528-33.000.

Archer, Michael, to British Petroleum Company Limited, The. Oil production system. 4,375,835, Cl. 166-339.000.

Armstrong, Joseph; Gordon, Robert L.; Walsh, William R.; and King, Sr., Jack H., to General Motors Corporation. Method for precise fitting of vehicle body closure. 4,375,716, Cl. 29-404.000.

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Allen, James A., 4,376,142, Cl. 427-393.000.

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Kimoto, Kyoji; and Ebisawa, Mikio, 4,376,140, Cl. 427-244.000.
Murofushi, Toshiaki; and Aoshima, Atsushi, 4,376,219, Cl. 568-697.000.

Ashcraft, Arnold C.: *See*—
Turbett, Robert J.; Ashcraft, Arnold C.; and Petty, Herbert E., 4,376,180, Cl. 524-188.000.

Asher, William J.: *See*—
Davis, Thomas A.; and Asher, William J., 4,376,059, Cl. 252-316.000.

Ashland Oil, Inc.: *See*—
Myers, George D., deceased, 4,376,038, Cl. 208-113.000.

Asselman, George A.; Castelijns, Adrianus P. J.; and Van Mensvoort, Adrianus J., to U.S. Philips Corporation. Tube and fin radiator. 4,375,832, Cl. 165-152.000.

Astrack, Alexander; and Schoenfeld, Charles G. Ozonolysis of whole cardamon seeds. 4,376,130, Cl. 426-253.000.

Auergesellschaft GmbH: *See*—
Beck, Martin; Hoht, Wolfgang; and Mushold, Udo, 4,375,768, Cl. 73-861.230.

Austin, Robert R.: *See*—
Lawford, Victor N.; and Austin, Robert R., 4,375,764, Cl. 73-301.000.

Awata, Misao: *See*—
Kawata, Ken; Itoh, Isamu; Awata, Misao; and Masuda, Takao, 4,376,162, Cl. 430-510.000.

B.W.B. Controls, Inc.: *See*—
Bergeron, Ned A., 4,375,789, Cl. 116-70.000.

Babcock & Wilcox Company, The: *See*—
Hammond, Charles W., 4,375,710, Cl. 15-316.00R.

Bachofen AG: *See*—
Kagi, Bruno; Hirmann, Georg; and Luginbuhl, Rolf, 4,375,822, Cl. 137-322.000.

Bader, Leonhard; Giessner, Frank; and Weber, Helmut. Ink jet print head. 4,376,284, Cl. 346-140.00R.

Bahl, Surinder K.; and Leach, Gale L. Recovery of gold from bromide etchants. 4,375,984, Cl. 75-97.00A.

Baker, Alan C.: *See*—
Keran, Vitie P.; and Baker, Alan C., 4,375,883, Cl. 266-91.000.

Baker, James W., Jr.; Hodge, Paul W.; and Schneider, Franklin R., to Dynamote Corporation. Portable power source. 4,376,250, Cl. 307-150.000.

Bakos, Peter: *See*—
Angelo, Raymond W.; and Bakos, Peter, 4,376,057, Cl. 252-79.400.

Balchunis, Robert J.; and Bany, Stephen W., to Minnesota Mining and Manufacturing Company. Antimony halide-organic phosphonate ester cationic polymerization catalysts. 4,376,063, Cl. 252-429.00R.
Baldwin, Dorothy M., to United States of America, Navy. Anamorphic system for redundancy in coherent fiber optic bundle transmission. 4,375,908, Cl. 350-96.250.
Ball, William J.; and Stewart, David G., to British Petroleum Company Limited, The. Method for preparing crystalline aluminosilicates. 4,376,104, Cl. 423-329.000.
Bando Kiko Co., Ltd.: *See*—
Bando, Shigeru, 4,375,738, Cl. 51-3.000.
Bando, Shigeru, to Bando Kiko Co., Ltd. Method for grinding glass plate and the like by numerical control and grinding machine therefor. 4,375,738, Cl. 51-3.000.
Bany, Stephen W.: *See*—
Balchunis, Robert J.; and Bany, Stephen W., 4,376,063, Cl. 252-429.00R.
Baranski, Andrzej S.: *See*—
Fawcett, William R.; and Baranski, Andrzej S., 4,376,016, Cl. 204-14.00N.
Barbini, Richard J.; and DeCicco, Matthew C. Snow horns. 4,375,755, Cl. 62-330.000.
Bargsten, Gunther, to Licentia Patent-Verwaltungs-GmbH. Cable duct. 4,376,230, Cl. 174-48.000.
Barkow, William H.: *See*—
Shisler, Robert W.; and Barkow, William H., 4,376,273, Cl. 335-213.000.
Barnes, Lawrence G., to Rockwell International Corporation. Suspension hanger bracket. 4,375,896, Cl. 280-718.000.
Barret, Paul. Asymmetrical internal combustion engine. 4,375,792, Cl. 123-51.0AA.
Barta, Jesse. Door alarm with flexible switch actuator. 4,376,276, Cl. 340-545.000.
Barthel, Walter: *See*—
Mueller, Karl-Hans; and Barthel, Walter, 4,375,988, Cl. 106-273.00R.
Battelle Development Corporation: *See*—
Zega, Bogdan, 4,376,025, Cl. 204-192.00R.
Battelle Memorial Institute: *See*—
Porta, Augusto; and Kulhanek, Antonin, 4,376,022, Cl. 204-180.00R.
Bauman, William C.: *See*—
Lee, John M.; and Bauman, William C., 4,376,100, Cl. 423-179.500.
Bayer Aktiengesellschaft: *See*—
Alberts, Heinrich; Friemann, Hans; Moretto, Hans-Heinrich; and Sattlegger, Hans, 4,376,185, Cl. 525-29.000.
Baylerian, Marguerite S.: *See*—
Shubkin, Ronald L.; and Baylerian, Marguerite S., 4,376,222, Cl. 585-255.000.
Baylor University: *See*—
Busch, Kenneth W., 4,375,919, Cl. 356-326.000.
BBC Brown, Boveri & Company, Limited: *See*—
Zerlik, Willibald, 4,375,823, Cl. 137-340.000.
Beams, David M.: *See*—
Sokol, David G.; Whitaker, Roger B.; Lord, John J.; and Beams, David M., 4,376,298, Cl. 364-551.000.
Beck, Martin; Hoht, Wolfgang; and Mushold, Udo, to Auergesellschaft GmbH. Electronic circuit for processing the measured values from a vortex sequence produced by a Karman vortex path. 4,375,768, Cl. 73-861.230.
Becker, Kunibert: *See*—
Beckmann, Klaus; and Becker, Kunibert, 4,375,904, Cl. 299-53.000.
Becker, Paul N.: *See*—
Bergman, Robert G.; Becker, Paul N.; and White, Mary A., 4,376,217, Cl. 564-448.000.
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Becton Dickinson and Company: *See*—
Burns, James A., 4,375,815, Cl. 128-314.000.
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Wallenfels, Kurt, 4,376,197, Cl. 536-17.400.
Beilfuss, Wolfgang: *See*—
Munzenmaier, Wolfgang; Eggensperger, Heinz; Ehlers, Helmut H.; Beilfuss, Wolfgang; Bucklers, Lothar; and Harke, Hans-Peter, 4,376,094, Cl. 422-36.000.
Belangee, Gilbert R.; Dransman, Robert J.; and Stone, Kirby L., to Cincinnati Milacron Inc. Closed loop control of compressible fluid addition to a mixture of such fluid and a liquid. 4,376,172, Cl. 521-133.000.
Bell Telephone Laboratories, Incorporated: *See*—
Alferness, Rodney C.; and Kaminow, Ivan P., 4,376,138, Cl. 427-160.000.
Fenderson, Gerald L.; and Skinner, Mitchell A., 4,376,309, Cl. 375-101.000.
Kohl, Paul A., 4,376,018, Cl. 204-49.000.
McNair, Bruce E., 4,376,308, Cl. 375-14.000.
Sabia, Raffaele A.; and Williams, James L., 4,376,231, Cl. 174-92.000.
Beloit Corporation: *See*—
Bergstrom, Jan I., 4,376,012, Cl. 162-123.000.
Bergstrom, Jan I., 4,376,014, Cl. 162-336.000.
Belykh, Sergei I.; Davydov, Anatoly B.; Kovalenko, Igor L.; Loktionova, Lidia Y.; Moschensky, Anatoly D.; Pershin, Gely G.; Pershin, Grigory N.; Padeiskaya, Elena N.; Polukhina, Lidia M.; Ochirov, Nikolai I.; and Filippov, Jury I. Joining element for fixation of bone tissues. 4,375,810, Cl. 128-92.00R.
Bemis Company, Inc.: *See*—
Paulos, James P., 4,375,851, Cl. 206-471.000.
Bendix Corporation, The: *See*—
Amin, Kamal E., 4,375,994, Cl. 148-11.50P.
Bennett, Robert A. Crimped thermoplastic filament. 4,376,152, Cl. 428-369.000.
Berg, Lars: *See*—
Lindskog, Nils; Oderstig, Ingvar; and Berg, Lars, 4,376,245, Cl. 219-552.000.
Bergeron, Ned A., to B.W.B. Controls, Inc. First out indicator. 4,375,789, Cl. 116-70.000.
Bergman, Robert G.; Becker, Paul N.; and White, Mary A., to University of California, Regents of the. Cobalt alkylnitroso complexes and methods therewith. 4,376,217, Cl. 564-448.000.
Bergstrom, Jan I., to Beloit Corporation. Method of forming a multi-ply web from paper stock. 4,376,012, Cl. 162-123.000.
Bergstrom, Jan I., to Beloit Corporation. Headbox for forming multiply sheets. 4,376,014, Cl. 162-336.000.
Bernstein, Seymour: *See*—
Duaza, John P.; Joseph, Joseph P.; and Bernstein, Seymour, 4,376,122, Cl. 424-270.000.
Bert, Stephen F.; Ripley, Richard E.; and Rieth, Kurt A., to Textron, Inc. Clasp for adjusting bracelet length. 4,375,713, Cl. 24-206.00R.
Bertolacini, Ralph J.; Hirschberg, Eugene H.; and Modica, Frank S., to Standard Oil Company (Indiana). Removing sulfur oxides from a gas. 4,376,103, Cl. 423-244.000.
Bertozzi, Eugene R., to Thiokol Corporation. Aryl amine terminated polysulfide polymers, related compounds and processes for their preparation. 4,376,193, Cl. 528-59.000.
Bessho, Michio. Double-acting hydraulic press. 4,375,781, Cl. 92-52.000.
Betush, Frank A., to Progressive Machine Products. Control unit for dental handpieces. 4,375,963, Cl. 433-28.000.
Bey, Ulf; Lassig, Martin; and Stotzer, Hermann, to Anschutz & Co., GmbH. Gyro compass. 4,375,726, Cl. 33-324.000.
Bhagwat, Pradeep M.; and Stefanovic, Victor R., to Canadian Patents & Dev. Ltd. DC-Side commutated inverter. 4,376,296, Cl. 363-138.000.
Biddison, Bradley O. Portable insulated container. 4,375,828, Cl. 150-2.100.
Biggs, William W.: *See*—
Wurm, John H.; Middendorf, Lyle R.; and Biggs, William W., 4,375,920, Cl. 356-380.000.
Billingsley, Henry C., to Outboard Marine Corporation. Dual fuel supply system. 4,375,795, Cl. 123-187.50R.
Binasik, Chester S.: *See*—
Vosper, Ralph R.; Spoormaker, Arie W.; Binasik, Chester S.; and Harthun, Norman E., 4,375,952, Cl. 431-171.000.
Binks Manufacturing Company: *See*—
Patel, Mulji; and Culbertson, Samuel W., 4,376,135, Cl. 427-31.000.
Springer, Carl M., 4,375,865, Cl. 222-135.000.
Bissery, Paul H.: *See*—
Guillaud, Maurice; and Bissery, Paul H., 4,375,985, Cl. 106-84.000.
Black, Robert A., Jr., to Honeywell Inc. Dynamic contact checking circuit. 4,376,277, Cl. 340-641.000.
Blomberg, Peter E., to Aktiebolaget Electrolux. Method and apparatus for controlling the temperature in the refrigerator chamber and freezer compartment of an absorption refrigerator. 4,375,750, Cl. 62-101.000.
Blount, David H. Process for the production of polyester resins. 4,376,171, Cl. 521-100.000.
Blount, David H. Process for the production of polyepoxy silicate resins. 4,376,173, Cl. 521-137.000.
Blount, David H. Process for the production of polyol-alkali metal silicate emulsion. 4,376,178, Cl. 524-47.000.
Bodelson, Berth I. A., to Alfa-Laval AB. Centrifugal separator with valved outlets. 4,375,870, Cl. 494-40.000.
Boden, Richard M.; Dekker, Lambert; Schmitt, Frederick L.; and Van Loveren, Augustinus G., to International Flavors & Fragrances Inc. Mixture of aliphatic C_{10} branched olefin epoxides and use thereof in augmenting or enhancing the aroma of perfumes and/or articles. 4,376,058, Cl. 252-174.110.
Boeing Company, The: *See*—
Alberti, John, 4,375,932, Cl. 410-69.000.
Shorey, Thomas H., 4,375,877, Cl. 244-137.00P.
Stewart, William L., 4,375,876, Cl. 244-129.500.
Boerigter, Milton E., to Fleetwood Furniture Company. Invalid bed. 4,375,707, Cl. 5-81.00R.
Bogner, Ben R.; and Grant-Acquah, Francis C., to Quaker Oats Company, The. Particle board process using polymeric isocyanate/release agent. 4,376,089, Cl. 264-109.000.
Bohan, John E., Jr., to Honeywell Inc. Bilevel flame signal sensing circuit. 4,375,951, Cl. 431-46.000.
Bohnenkamp, Heinrich, to SMS Schloemann-Siemag Aktiengesellschaft. Method and apparatus for cooling metal strip wound into coils. 4,375,998, Cl. 148-157.000.
Boise Cascade Corporation: *See*—
Woerz, Stephen E., 4,375,969, Cl. 493-158.000.
Bom, Cornelis J. G.: *See*—
van der Lely, Ary; and Bom, Cornelis J. G., 4,375,837, Cl. 172-68.000.
Bononi, Walter H. Coating for eyeglasses. 4,375,911, Cl. 351-122.000.
Bos, Cornelis. Rear projection screen and method for the production thereof. 4,375,909, Cl. 350-117.000.

Bouchard, Andre C.; Scholz, John A.; and Fohl, Timothy, to GTE Products Corporation. Miniature photoflash unit with encapsulated flash lamps. 4,375,953, Cl. 431-359.000.

Bourget, Jean-Claude, to Les Cables de Lyon. Method of end-to-end cable joining for use with small diameter, armored cable having compressed mineral insulation. 4,375,720, Cl. 29-869.000.

Bowen, John G., to Rincon Industries, Inc. Heating unit for disinfecting purposes. 4,376,096, Cl. 422-116.000.

Bower, Kenneth W., to Exxon Research and Engineering Co. Method and apparatus for using a disposable ink jet assembly in a facsimile system and the like. 4,376,283, Cl. 346-140.00R.

Bozler, Carl O.: *See*—
Fan, John C. C.; and Bozler, Carl O., 4,376,228, Cl. 136-255.000.

Bracanin, Brian F.: *See*—
Davis, Richard H.; Bracanin, Brian F.; and Clements, Ronald J., 4,376,280, Cl. 340-870.170.

Brackett, Neil C.; and Kester, William W., to Margaret M. Milhouse. Screw anchor screw removal device. 4,375,772, Cl. 81-462.000.

Bradley Corporation: *See*—
Leotta, Samuel S.; Petro, James G.; and Ortner, Arthur A., 4,375,874, Cl. 242-55.300.

Brandenburg, Jan H.; and van Herk, Cornelis, to Hoogovens Ijmuiden B.V. Hot blast stove arrangement for a blast furnace. 4,375,956, Cl. 432-76.000.

Brandt Industries, Inc.: *See*—
Brandt, Robert O., Jr., 4,375,769, Cl. 73-861.660.

Brandt, Robert O., Jr., to Brandt Industries, Inc. Transverse-duct insertion type pressure averaging primary. 4,375,769, Cl. 73-861.660.

Branduzzi, Paolo: *See*—
Vitobello, Vincenza; Branduzzi, Paolo; and Cimini, Nadia, 4,376,167, Cl. 435-276.000.

Bratton, Raymond J.; and Andersson, Clarence A., to Westinghouse Electric Corp. Method of manufacturing a transpiration cooled ceramic blade for a gas turbine. 4,376,004, Cl. 156-89.000.

Braun Aktiengesellschaft: *See*—
Pittroff, Kurt; Lang, Gerhard; and Schwarz, Gerhard, 4,376,263, Cl. 320-32.000.

Braun, Jimmy E.: *See*—
Anderson, Jared A.; Van Gelder, Robert V.; Yazolino, Lauren F.; and Braun, Jimmy E., 4,376,297, Cl. 364-200.000.

Briner, Emil; Novak, Peter; and Gasser, Hermann, to Rieter Machine Works Ltd. Apparatus for controlling the rotational speed of the spindles of a spinning preparatory machine. 4,375,744, Cl. 57-96.000.

British Petroleum Company Limited, The: *See*—
Archer, Michael, 4,375,835, Cl. 166-339.000.
Ball, William J.; and Stewart, David G., 4,376,104, Cl. 423-329.000.
Pywell, Richard F., 4,375,761, Cl. 73-7.000.
Wilson, Douglas, 4,376,176, Cl. 524-7.000.

Brock, Jimmy M. Pipe aligning apparatus. 4,375,724, Cl. 33-180.00R.

Brooker, Gary; Terasaki, Wesley L.; and Linden, Joel M., to University of Virginia Alumni Patents Foundation. Aminobenzlpropranolol and pharmaceutical preparation thereof. 4,376,125, Cl. 424-330.000.

Brooks, Phillip A. Sonic bonding means for orthodontics. 4,375,961, Cl. 433-4.000.

Brown, Donald J., to JPD Manufacturing Limited. Portable abrading cabinet device for recycling abrasive blasting system. 4,375,740, Cl. 51-425.000.

Brown, Jonathan G.: *See*—
Stohlquist, Roger H.; and Brown, Jonathan G., 4,375,826, Cl. 141-137.000.

Brown, Robert A., to Weyerhaeuser Company. Chip sizing process. 4,376,042, Cl. 209-38.000.

Bruggeman, Aime E.; Leysen, Roger F. R.; Vermeiren, Philippe; and Monsecour, Marcel, to Studiecentrum voor Kernenergie, S.C.K. Method for preparing a catalyst for an isotopic exchange column. 4,376,066, Cl. 252-430.000.

Brutti, Mario, to Costruzioni Macchine da Cucire Industriali la Mocassino di Berdini Ezio & C.S. n.c. Machine for stitching the upper border of shoes commonly called moccasins. 4,375,787, Cl. 112-28.000.

Buchanen, Wiley T., III. Footwear having retractable spikes. 4,375,729, Cl. 36-61.000.

Bucklers, Lothar: *See*—
Munzenmaier, Wolfgang; Eggensperger, Heinz; Ehlers, Helmut H.; Beilfuss, Wolfgang; Bucklers, Lothar; and Harke, Hans-Peter, 4,376,094, Cl. 422-36.000.

Budd, Robert A. Adapter for fishing rod holder. 4,375,731, Cl. 43-21.200.

Buff, Grier E.; and Phillips, Talmadge V., to Republic Steel Corporation. Flash welding apparatus and method. 4,376,242, Cl. 219-97.000.

Bullock, George P.; and Marshall, Barry R., to Ambic Group Limited. Method and system employing a filter-detector for detecting mastitis in cows. 4,376,053, Cl. 210-767.000.

Bulten-Kanthal AB: *See*—
Lindskog, Nils; Oderstig, Ingvar; and Berg, Lars, 4,376,245, Cl. 219-552.000.

Bunge Corporation: *See*—
Chambers, Al L.; and Parker, Carl V., 4,375,845, Cl. 198-570.000.
Farmer, Richard D., 4,376,073, Cl. 260-123.500.

Burkett, Nora A. Traffic board game apparatus. 4,375,889, Cl. 273-254.000.

Burney, Harry S., Jr.: *See*—
Ezzell, Bobby R.; Burney, Harry S., Jr.; and Sorenson, Marius W., 4,376,030, Cl. 204-296.000.

Burns, James A., to Becton Dickinson and Company. Retractable lancet assembly. 4,375,815, Cl. 128-314.000.

Burroughs Corporation: *See*—
Flora, Laurence P., 4,376,275, Cl. 340-347.0DD.

Burry, Stephen W., to CTS Corporation. Method for producing uniform density and weight briquettes. 4,376,085, Cl. 264-40.400.

Busch, Kenneth W., to Baylor University. Multiple entrance aperture dispersive optical spectrometer. 4,375,919, Cl. 356-326.000.

Butler Manufacturing Company: *See*—
Ditzenberger, Doyle, 4,376,044, Cl. 209-234.000.

Butterwick, Gilbert N., to RCA Corporation. Shielded focusing electrode assembly for a photomultiplier tube. 4,376,246, Cl. 250-207.000.

Buzzella, Joseph R. Sliding sash window assembly. 4,375,737, Cl. 49-428.000.

Byrne, Robert E.; Cancio, Leopoldo V.; Raffel, Arthur J.; and Wu, Pai-Chuan, to Clopay Corporation. Plastic film having a matte finish. 4,376,147, Cl. 428-167.000.

C-I-L Inc.: *See*—
Utracki, Lechoslaw A. M., 4,376,002, Cl. 149-35.000.

C. Itoh Electronics, Inc.: *See*—
Hidaka, Kenjiro; and Kondur, Nicholas, Jr., 4,375,923, Cl. 400-82.000.

C. Van der Lely N.V.: *See*—
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Cadet, Andre, to Compagnie Francaise de Raffinage. Process for the separation of saturated hydrocarbons from a hydrocarbon charge containing them. 4,376,035, Cl. 208-33.000.

Cadwell, Dennis J.: *See*—
Kmosk, Stanley; and Cadwell, Dennis J., 4,376,092, Cl. 376-353.000.

Calderon, Albert. Method for recovering shale oil from shale. 4,376,033, Cl. 208-11.00R.

California Institute of Technology: *See*—
Evanchuk, Vincent L., 4,376,160, Cl. 430-321.000.

Callais, Ivan G., Jr. Bleeding monster toy. 4,375,733, Cl. 46-116.000.

Campbell, Jack L. Mobile support. 4,375,840, Cl. 180-6.500.

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Bhagwat, Pradeep M.; and Stefanovic, Victor R., 4,376,296, Cl. 363-138.000.
Levy, Alan W.; Szanto, Attila J.; and Wheeler, Peter C., 4,376,253, Cl. 307-590.000.

Canadian Patents & Development Limited: *See*—
Farnand, J. Redmond, 4,376,133, Cl. 426-656.000.

Cancio, Leopoldo V.: *See*—
Byrne, Robert E.; Cancio, Leopoldo V.; Raffel, Arthur J.; and Wu, Pai-Chuan, 4,376,147, Cl. 428-167.000.

Canon Kabushiki Kaisha: *See*—
Kiuchi, Masayoshi; Uchidoi, Masanori; and Murakami, Hiroyasu, 4,376,265, Cl. 324-426.000.
Uchidoi, Masanori; and Urushihara, Kazunobu, 4,375,915, Cl. 354-234.000.

Cardy, Charles F., to Interox Chemicals Limited. Compositions comprising visco-elastic liquid compounds. 4,376,153, Cl. 428-430.000.

Carl Stahl GmbH & Co.: *See*—
Korger, Heinz, 4,375,714, Cl. 24-230.0AL.

Carlson, Graydon S.: *See*—
Smyth, William A.; Carlson, Graydon S.; and Wilde, Harold J., 4,375,850, Cl. 206-387.000.

Carlson, Richard P.; Fenichel, Richard L.; Lewis, Alan J.; and Wolf, Milton, to American Home Products Corporation. Method for modulating the immune response with dibenzocycloheptenylidenes. 4,376,124, Cl. 424-308.000.

Carrier Corporation: *See*—
Ciarlei, Joseph A.; Jennings, William B.; and Tobin, Curtis L., 4,375,804, Cl. 126-306.000.
Mount, Gordon L.; Huenniger, Edward A.; and Mulugeta, Jarso, 4,375,939, Cl. 415-157.000.

Casagrande, Cesare: *See*—
Godfraind, Theophile; Ghirardi, Paolo; Ferrari, Giorgio; and Casagrande, Cesare, 4,376,117, Cl. 424-211.000.

Castelijns, Adrianus P. J.: *See*—
Asselman, George A.; Castelijns, Adrianus P. J.; and Van Mensvoort, Adrianus J., 4,375,832, Cl. 165-152.000.

Celada, Juan; MacKay, Patrick W.; Price-Falcon, Juan F.; and Virsmontes-Brown, Ricardo, to Hylsa, S.A. Method of making sponge metal. 4,375,983, Cl. 75-35.000.

Centre Technique Du Bois: *See*—
Elbez, Gerard; and de Leeuw, Jean, 4,376,003, Cl. 156-79.000.

Certron Corporation: *See*—
Smyth, William A.; Carlson, Graydon S.; and Wilde, Harold J., 4,375,850, Cl. 206-387.000.

Chambers, Al L.; and Parker, Carl V., to Bunge Corporation. Tail section for multiple chain drag conveyor. 4,375,845, Cl. 198-570.000.

Chang, Mike S. H., to Pitney Bowes Inc. Vinyl polysiloxane polymers release compositions and methods. 4,376,210, Cl. 556-450.000.

Chant, Bernard J.: *See*—
Mookherjee, Braja D.; Trenkle, Robert W.; Chant, Bernard J.; van Ouwerkerk, Anton; Kamath, Venkatesh; and Mussinan, Cynthia J., 4,376,068, Cl. 252-522.00R.

Chappot, Alain, to Societe Anonyme dite: Compagnie Generale d'Automatisme. Apparatus for inserting and extracting flexible flat objects into and out from a magazine. 4,375,856, Cl. 209-706.000.

Chattha, Mohinder S.: *See*—
Theodore, Ares N.; and Chattha, Mohinder S., 4,376,187, Cl. 525-123.000.

Chen, Nai Y.: *See*—
Garwood, William E.; Rodewald, Paul G.; and Chen, Nai Y., 4,376,036, Cl. 208-111.000.
Chevron Research Company: *See*—
Dahlberg, Arthur J.; Shinn, John H.; Rosenthal, Joel W.; and Chu, Tim T., 4,376,037, Cl. 208-111.000.
Erdman, Timothy R., 4,376,056, Cl. 252-56.00R.
Roberts, F. Alex, 4,376,301, Cl. 367-19.000.
Spars, Byron G., 4,376,015, Cl. 201-17.000.
Child, Frank W. Method and apparatus for pumping blood. 4,375,941, Cl. 417-53.000.
Chimicasa GmbH: *See*—
Dwivedi, Basant K.; and Raniwala, Subodh K., 4,376,198, Cl. 536-4.100.
Chino, Tetsuichi: *See*—
Tawara, Yoshio; Chino, Tetsuichi; and Ohashi, Ken, 4,375,996, Cl. 148-31.570.
Chinoin Gyogyszer es Vegyeszeti Termekek Gyara Rt.: *See*—
Piukovich, Sandor; Stankovics, Lajos; and Kiralyhidi, Tibor, 4,376,129, Cl. 426-64.000.
Chitil, Manfred, to Klockner-Werke AG. Method for purifying a dust-containing hot gas, more particularly coal gas produced from coal fed into a steel or iron bath reactor. 4,375,982, Cl. 75-25.000.
Chore-Time Equipment, Inc.: *See*—
Peppler, William, 4,375,791, Cl. 119-52.0AF.
Christel, Werner: *See*—
Itzinger, Hermann; Koller, Manfred; Jager, Erich; and Christel, Werner, 4,375,843, Cl. 188-322.190.
Chu, Tien W.; and Holland, Thomas W., to Martin Martietta Corporation. Video preamplifier for laser systems. 4,376,267, Cl. 330-284.000.
Chu, Tim T.: *See*—
Dahlberg, Arthur J.; Shinn, John H.; Rosenthal, Joel W.; and Chu, Tim T., 4,376,037, Cl. 208-111.000.
Ciarlei, Joseph A.; Jennings, William B.; and Tobin, Curtis L., to Carrier Corporation. Multiple position leg assembly for a heat exchange unit. 4,375,804, Cl. 126-306.000.
Ciba-Geigy Corporation: *See*—
Schupp, Thomas; Traxler, Peter; and Nuesch, Jakob, 4,376,166, Cl. 435-253.000.
Topfl, Rosemarie, 4,376,078, Cl. 260-404.500.
Zinke, Horst, 4,376,054, Cl. 252-46.700.
Cimini, Nadia: *See*—
Vitobello, Vincenza; Branduzzi, Paolo; and Cimini, Nadia, 4,376,167, Cl. 435-276.000.
Cincinnati Milacron Inc.: *See*—
Belangee, Gilbert R.; Dransman, Robert J.; and Stone, Kirby L., 4,376,172, Cl. 521-133.000.
Clark, Travis B. Protective flood barrier. 4,375,929, Cl. 405-114.000.
Clements, Ronald J.: *See*—
Davis, Richard H.; Bracanin, Brian F.; and Clements, Ronald J., 4,376,280, Cl. 340-870.170.
Clopay Corporation: *See*—
Byrne, Robert E.; Cancio, Leopoldo V.; Raffel, Arthur J.; and Wu, Pai-Chuan, 4,376,147, Cl. 428-167.000.
Coble, Charlie G.: *See*—
Feller, Ron; Nahir, David; and Coble, Charlie G., 4,375,853, Cl. 209-640.000.
Coen Company, Inc.: *See*—
Vosper, Ralph R.; Spoormaker, Arie W.; Binasik, Chester S.; and Harthun, Norman E., 4,375,952, Cl. 431-171.000.
Cohen, Chous: *See*—
Maldonado, Paul; Cohen, Chous; and Sillion, Bernard, 4,375,974, Cl. 44-63.000.
Collins, Edward J.; and Suster, Mary E., to General Electric Company. Flash lamp array circuit with improved fuse means. 4,375,955, Cl. 431-359.000.
Communications Patents Limited: *See*—
Smart, Daniel H., 4,376,274, Cl. 336-183.000.
Compagnie Francaise de Raffinage: *See*—
Cadet, Andre, 4,376,035, Cl. 208-33.000.
Concast AG: *See*—
Rohrig, Adalbert, 4,375,830, Cl. 164-/68.000.
Conger, Ronald R., to General Electric Company. Electro-mechanical switching system. 4,376,311, Cl. 455-158.000.
Congoleum Corporation: *See*—
Graham, Alan A.; Haemer, Laurence F.; and Miller, Charles H., 4,375,808, Cl. 126-445.000.
Connolly, Philip B., to New Zealand Milk Products, Inc. Method of producing milk protein isolates and milk protein/vegetable protein isolates and compositions of same. 4,376,072, Cl. 260-120.000.
Container Corporation of America: *See*—
Nauheimer, James F., 4,375,846, Cl. 206-195.000.
Cooper, Glenn D., to General Electric Company. Thermoplastic composition having improved impact modifier and process for production. 4,376,186, Cl. 525-68.000.
Cooper, Paul, to Ingersoll-Rand Company. Roto-dynamic pump with a backflow recirculator. 4,375,937, Cl. 415-53.00R.
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Sullivan, Kevin J., 4,375,743, Cl. 53-434.000.
Wiker, Richard M., 4,376,170, Cl. 501-32.000.
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Lovera, Bruno; and Pancotti, Santino, 4,375,940, Cl. 416-114.000.
Costruzioni Macchine da Cucire Industriali la Mocassino di Berdini Ezio & C.S. n.c.: *See*—
Brutti, Mario, 4,375,787, Cl. 112-28.000.
Coward, James K.; and Tang, Kuo-Chang, to Research Corporation. Polyamine biosynthesis inhibitors. 4,376,116, Cl. 424-180.000.
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Crow, Robert Q.; and Hansen, David H. Flexible concrete for soil erosion prevention. 4,375,928, Cl. 405-20.000.
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Giusto, Pietro P., 4,376,306, Cl. 370-110.400.
CTS Corporation: *See*—
Burry, Stephen W., 4,376,085, Cl. 264-40.400.
Culbertson, Samuel W.: *See*—
Patel, Mulji; and Culbertson, Samuel W., 4,376,135, Cl. 427-31.000.
Culemeyer, Karl: *See*—
Zucker, Friedrich J.; Osthaus, Georg; Hanig, Gernot; and Culemeyer, Karl, 4,376,079, Cl. 260-413.000.
Curtis, Arney L. Extendible bunk stake. 4,375,893, Cl. 280-146.000.
D & D Company Ltd.: *See*—
Trott, Donald E., 4,375,834, Cl. 166-297.000.
Daher, Lawrence J.; Hoss, George C.; and Raul, Victor A., to Miles Laboratories, Inc. Stable nonaqueous solution of tetracycline salt. 4,376,118, Cl. 424-227.000.
Dahlberg, Arthur J.; Shinn, John H.; Rosenthal, Joel W.; and Chu, Tim T., to Chevron Research Company. Hydroprocessing of heavy hydrocarbonaceous oils. 4,376,037, Cl. 208-111.000.
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Nishikawa, Seiichi; and Honda, Makoto, 4,376,006, Cl. 156-233.000.
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Isono, Koichi; and Takagi, Tsuneo, 4,375,918, Cl. 355-35.000.
Dassler, Armin A., to Puma - Sportschuhfabriken Rudolf Dassler KG. Sole made of rubber or other elastic material for shoes, especially sports shoes. 4,375,728, Cl. 36-32.00R.
Date, Takasaburo; Maki, Toshimichi; Iguchi, Mitsuya; Iwamaru, Sumifusa; and Watanabe, Hisashi, to Nippon Kokan Kabushiki Kaisha; and Toshin Seiko Kabushiki Kaisha. Method for preheating steel scrap by exhaust gas from steelmaking electric furnace. 4,375,958, Cl. 432-9.000.
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Poliniak, Eugene S.; and Datta, Pabitra, 4,376,087, Cl. 264-107.000.
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Davis, Richard H.; Bracanin, Brian F.; and Clements, Ronald J., to Direct Reduction Corporation, The. Instrument system for iron oxide reducing kilns. 4,376,280, Cl. 340-870.170.
Davis, Thomas A.; and Asher, William J., to Exxon Research and Engineering Co. Process for preparing artificial red cells. 4,376,059, Cl. 252-316.000.
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Dayco Corporation: *See*—
Vitellaro, Frank A., 4,376,005, Cl. 156-195.000.
Dechantsreiter, Max J., to Harnischfeger Corporation. Stacker crane for movement of coils. 4,375,936, Cl. 414-626.000.
DeCicco, Matthew C.: *See*—
Barbini, Richard J.; and DeCicco, Matthew C., 4,375,755, Cl. 62-330.000.
Degussa AG: *See*—
Deller, Klaus; Kleemann, Axel; Martens, Jurgen; and Weigel, Horst, 4,376,215, Cl. 564-198.000.
Degussa Aktiengesellschaft: *See*—
Mueller, Karl-Hans; and Barthel, Walter, 4,375,988, Cl. 106-273.00R.
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Boden, Richard M.; Dekker, Lambert; Schmitt, Frederick L.; and Van Loveren, Augustinus G., 4,376,058, Cl. 252-174.110.
de Leeuw, Jean: *See*—
Elbez, Gerard; and de Leeuw, Jean, 4,376,003, Cl. 156-79.000.
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Delmed, Inc.: *See*—
Hessel, Stephen R., 4,375,813, Cl. 128-214.00C.
Dennis, James T.; and Kolomayets, George, to Dennis, James T. Automatic record player. 4,376,305, Cl. 369-210.000.
Designs Five, Inc.: *See*—
MacDonald, Christopher, 4,375,901, Cl. 297-377.000.
Desoutter Limited: *See*—
Stuart, Gerald W., 4,376,240, Cl. 200-322.000.
Deutsch, Daniel H. System with asymmetric microporous membrane for the circulation or movement of solutions. 4,376,046, Cl. 210-176.000.
DeWoskin, Irvin S., to Orthoband Company, Inc. Orthodontic traction apparatus. 4,375,962, Cl. 433-5.000.
Dickey-john Corporation: *See*—
Sokol, David G.; Whitaker, Roger B.; Lord, John J.; and Beams, David M., 4,376,298, Cl. 364-551.000.

Diesel Kiki Company, Ltd.: *See*—
Okura, Eiji, 4,375,754, Cl. 62-180.000.
Dionex Corporation: *See*—
Pohl, Christopher A., 4,376,047, Cl. 210-198.200.
Direct Reduction Corporation, The: *See*—
Davis, Richard H.; Bracanin, Brian F.; and Clements, Ronald J., 4,376,280, Cl. 340-870.170.
Keran, Vitie P.; and Baker, Alan C., 4,375,883, Cl. 266-91.000.
Ditzenberger, Doyle, to Butler Manufacturing Company. Automatic sizing device. 4,376,044, Cl. 209-234.000.
DMA Systems Corporation: *See*—
Meier, Markus; and Sutton, David A., 4,376,294, Cl. 360-105.000.
DMV-Campina B.V.: *See*—
Evers, Paulus H. J. M., 4,376,126, Cl. 426-43.000.
Doemen, Benno: *See*—
von der Heide, Johann; Muller, Rolf; and Doemen, Benno, 4,376,261, Cl. 318-254.000.
Dokter, Hendrik D.; Hildering, Roelof; and Mackor, Adrianus, to Papierfabricken Van Houtem & Palm B.V. Method of checking the authenticity of papers and physically identifiable paper for use in said method. 4,376,264, Cl. 324-316.000.
Dorma Door Controls Inc.: *See*—
Rhoads, James D., 4,375,735, Cl. 49-68.000.
Dorman, Hugh H., to PATCO. Method for making swivel fitting. 4,375,715, Cl. 29-148.40A.
Dorr, George G.; and Miller, James R., to Giltspur Exhibits/Rochester. Framing apparatus, method and framing member. 4,375,829, Cl. 160-135.000.
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Wolter, Erhard; Wiegleb, Ludwig; Kruger, Roland; Ladwig, Heinz; and Ehrlinger, Klaus, 4,376,109, Cl. 423-659.000.
Dow Chemical Company, The: *See*—
Ezzell, Bobby R.; Burney, Harry S., Jr.; and Sorenson, Marius W., 4,376,030, Cl. 204-296.000.
Lee, John M.; and Bauman, William C., 4,376,100, Cl. 423-179.500.
Pews, Richard G., 4,376,201, Cl. 544-242.000.
Shipley, Randall S.; and Vance, Fred L., Jr., 4,376,065, Cl. 252-429.00B.
Downing, James E., Jr. Geothermal storage heating and cooling system. 4,375,831, Cl. 165-48.00R.
Doyle, Richard: *See*—
Novak, Raymond F.; and Doyle, Richard, 4,375,867, Cl. 227-109.000.
Dransman, Robert J.: *See*—
Belangee, Gilbert R.; Dransman, Robert J.; and Stone, Kirby L., 4,376,172, Cl. 521-133.000.
Dravo Corporation: *See*—
Gessler, Donald A., 4,376,052, Cl. 210-511.000.
Drouillard, James R., to General Motors Corporation. Manually operated bucket seat adjuster. 4,375,905, Cl. 308-6.00R.
Druet, Clair, to La Technique Integrale, Societe Anonyme Francaise. Releasable screw and nut bearing mechanism. 4,375,770, Cl. 74-424.80A.
Duecker, Heyman C.: *See*—
Lange, Bruce A.; and Duecker, Heyman C., 4,375,987, Cl. 106-95.000.
Duo-Fast Corporation: *See*—
Novak, Raymond F.; and Doyle, Richard, 4,375,867, Cl. 227-109.000.
Du Pont de Nemours, E. I., and Company: *See*—
Haskell, Vernon C., 4,376,183, Cl. 524-417.000.
Lee, Ying K., 4,376,195, Cl. 528-353.000.
Marczewski, Richard D.; and Ross, Francis J., 4,376,028, Cl. 204-247.000.
Richardson, Paul N., 4,376,182, Cl. 524-371.000.
Romanauskas, William A., 4,375,871, Cl. 494-41.000.
Durley, Benton A., III. Automatic combustion control method and apparatus. 4,375,950, Cl. 431-12.000.
Dussourd, Jules L., to Ingersoll-Rand Company. Roto-dynamic pump with a diffusion back flow recirculator. 4,375,938, Cl. 415-53.00R.
Dusza, John P.; Joseph, Joseph P.; and Bernstein, Seymour, to American Cyanamid Company. Novel 3-substituted amino-1-heteroaryl-2-pyrazolines. 4,376,122, Cl. 424-270.000.
Dwivedi, Basant K.; and Raniwala, Subodh K., to Chimicasa GmbH. Process for the manufacture of glucosylsorbitol. 4,376,198, Cl. 536-4.100.
Dynamics Research Corporation: *See*—
Volpe, Lake R., 4,376,161, Cl. 430-321.000.
Dynamote Corporation: *See*—
Baker, James W., Jr.; Hodge, Paul W.; and Schneider, Franklin R., 4,376,250, Cl. 307-150.000.
Dynes/Rivett Inc.: *See*—
Olson, John R., 4,375,942, Cl. 417-222.000.
Dyno Industrier A.S.: *See*—
Ulsteen, Kare, 4,376,083, Cl. 264-3.00D.
E.N.I. Ente Nazionale Idrocarburi: *See*—
Vitobello, Vincenza; Branduzzi, Paolo; and Cimini, Nadia, 4,376,167, Cl. 435-276.000.
Ebeling, Harold O.: *See*—
Honerkamp, Joseph D.; and Ebeling, Harold O., 4,375,977, Cl. 55-234.000.
Ebisawa, Mikio: *See*—
Kimoto, Kyoji; and Ebisawa, Mikio, 4,376,140, Cl. 427-244.000.
Eckman, Donald E. Charge mixing carburetor plate. 4,375,801, Cl. 123-590.000.
Ecodyne Corporation: *See*—
Siskind, David A., 4,376,045, Cl. 210-134.000.
Edmonds, James T., Jr.: *See*—
Sherk, Fred T.; and Edmonds, James T., Jr., 4,376,196, Cl. 528-481.000.
Edward Weck & Company, Inc.: *See*—
Giersch, Robert V.; Hoeppner, Douglas K.; and Webb, William D., 4,375,866, Cl. 227-19.000.
Edzenga, Laurence: *See*—
Shah, Hemant D.; and Edzenga, Laurence, 4,375,858, Cl. 215-217.000.
Eggensperger, Heinz: *See*—
Munzenmaier, Wolfgang; Eggensperger, Heinz; Ehlers, Helmut H.; Beilfuss, Wolfgang; Bucklers, Lothar; and Harke, Hans-Peter, 4,376,094, Cl. 422-36.000.
Eguchi, Hajime; Furukawa, Hideko; and Kawakita, Tetsuya, to Ajinomoto Co., Ltd. Seasoning composition having crab meat flavor. 4,376,132, Cl. 426-537.000.
Ehlers, Helmut H.: *See*—
Munzenmaier, Wolfgang; Eggensperger, Heinz; Ehlers, Helmut H.; Beilfuss, Wolfgang; Bucklers, Lothar; and Harke, Hans-Peter, 4,376,094, Cl. 422-36.000.
Ehnstrom, Lars K. J., to Alfa-Laval AB. Process for producing ethanol by continuous fermentation of polysaccharide-containing raw materials. 4,376,163, Cl. 435-162.000.
Ehrlinger, Klaus: *See*—
Wolter, Erhard; Wiegleb, Ludwig; Kruger, Roland; Ladwig, Heinz; and Ehrlinger, Klaus, 4,376,109, Cl. 423-659.000.
Eigenmann, Ludwig. Machine for preparing road surfaces and forming traffic regulating lines thereon. 4,376,007, Cl. 156-497.000.
Ekco Products, Inc.: *See*—
Kurinsky, Roger A.; Alexander, Fred D.; and Holzkopf, Michael E., 4,375,862, Cl. 220-293.000.
Elbez, Gerard; and de Leeuw, Jean, to Centre Technique Du Bois. Process for bonding together boards of wood with rough or smooth surface, of sliced off or peeled veneer, product used for said bonding and final material obtained. 4,376,003, Cl. 156-79.000.
Elco Corporation: *See*—
Korosec, Philip S.; and Litt Fredric A., 4,376,055, Cl. 252-32.70E.
Electrodrill, Inc.: *See*—
Andrews, James D., 4,376,020, Cl. 204-129.500.
Elkem A/S: *See*—
Krogsrud, Harald, 4,375,960, Cl. 432-239.000.
Elliott, Louis T. Lifting and positioning apparatus for construction panels. 4,375,934, Cl. 414-11.000.
Emelock, Melvin. Hydrogen generator for motor vehicle. 4,376,097, Cl. 422-189.000.
Engle, William R.; Moore, E. Neil, Jr.; Spear, Joseph F., Jr.; and Rockland, Ronald H., to Medtronic, Inc. Implantable cardioverter. 4,375,817, Cl. 128-419.00D.
Enomoto, Katsunori; Muramatsu, Tomomitsu; and Maeda, Shiro, to Nippondenso Co., Ltd. Temperature responsive valve. 4,375,873, Cl. 236-86.000.
Eppler, Richard A., to Mobay Chemical Corporation. Low-melting, lead-free ceramic frits. 4,376,169, Cl. 501-24.000.
Erdman, Timothy R., to Chevron Research Company. Fuel economy in internal combustion engines. 4,376,056, Cl. 252-56.00R.
Erdt, Wolfgang, to Hilti Aktiengesellschaft. Stand for supporting a drilling tool. 4,375,931, Cl. 408-234.000.
Estel Hoogovens B.V.: *See*—
Heijwegen, Cornelis P.; and Kat, Willem, 4,376,043, Cl. 209-167.000.
Ethyl Corporation: *See*—
Shubkin, Ronald L.; and Baylerian, Marguerite S., 4,376,222, Cl. 585-255.000.
Etter, Margaret C.: *See*—
Schultz, William J.; Etter, Margaret C.; Pocius, Alphonsus V.; and Smith, Samuel, 4,376,190, Cl. 525-333.100.
Evanchuk, Vincent L., to California Institute of Technology. Method of making and structure for monolithic optical circuits. 4,376,160, Cl. 430-321.000.
Evans, David M.; and Weightman, Barry O., to National Research Development Corporation. Endoprosthetic bone joint devices. 4,375,703, Cl. 3-1.910.
Evers, Paulus H. J. M., to DMV-Campina B.V. Method of making a yoghurt beverage and product thereby. 4,376,126, Cl. 426-43.000.
Expert N.V.: *See*—
Oosterling, Pieter A.; and Van Zweeden, Adriaan, 4,375,786, Cl. 100-189.000.
Exxon Research and Engineering Co.: *See*—
Agarwal, Pawan K.; and Lundberg, Robert D., 4,376,179, Cl. 524-65.000.
Bower, Kenneth W., 4,376,283, Cl. 346-140.00R.
Davis, Thomas A.; and Asher, William J., 4,376,059, Cl. 252-316.000.
Gladrow, Elroy M.; Winter, William E.; and Schuette, William L., 4,376,039, Cl. 208-120.000.
Juhasz, Tibor; and Heyn, Hans E., 4,376,146, Cl. 428-95.000.
Rosenfeld, Daniel D.; and Vaughan, David E. W., 4,376,226, Cl. 585-828.000.
Rossi, Albert; Rehrer, David H.; Oswald, Alexis A.; Lewtas, Kenneth; and Tack, Robert D., 4,375,973, Cl. 44-62.000.
Salooja, Kailash C., 4,375,949, Cl. 431-7.000.
Sartori, Guido; Kim, Chang J.; Melchior, Michael T.; and Savage, David W., 4,376,101, Cl. 423-223.000.
Stadler, James F., 4,376,060, Cl. 252-42.100.

Thaler, Warren A.; Sartori, Guido; and Kim, Chang J., 4,376,102, Cl. 423-223.000.
Ezzell, Bobby R.; Burney, Harry S., Jr.; and Sorenson, Marius W., to Dow Chemical Company, The. Electrolytic cell ion-exchange membranes. 4,376,030, Cl. 204-296.000.
Facto, Arthur R. Coin operated mechanism with anti-theft latch. 4,375,844, Cl. 194-54.000.
Fan, John C. C.; and Bozler, Carl O., to Massachusetts Institute of Technology. Solar cells having ultrathin active layers. 4,376,228, Cl. 136-255.000.
Farmer, Richard D., to Bunge Corporation. Method and apparatus for desolventizing residual solids after oil extraction therefrom. 4,376,073, Cl. 260-123.500.
Farnand, J. Redmond, to Canadian Patents & Development Limited. Agglomeration of proteinaceous solids. 4,376,133, Cl. 426-656.000.
Fawcett, William R.; and Baranski, Andrzej S., to TDC Technology Development Corporation. Baths for electrodeposition of metal chalconide films. 4,376,016, Cl. 204-14.00N.
Feldmuhle Aktiengesellschaft: *See*—
von Borries, Horst; and Rittel, Hans-Gerd, 4,375,824, Cl. 137-614.170.
Feller, Ron; Nahir, David; and Coble, Charlie G., to Texas A & M University System. Apparatus for separating clods and agricultural products. 4,375,853, Cl. 209-640.000.
Feller, Thomas R., to Allis-Chalmers Corporation. Device for removing components from shafts. 4,375,926, Cl. 403-15.000.
Fenderson, Gerald L.; and Skinner, Mitchell A., to Bell Telephone Laboratories, Incorporated. Method and apparatus for signal-eye tracking in digital transmission systems. 4,376,309, Cl. 375-101.000.
Fenichel, Richard L.: *See*—
Carlson, Richard P.; Fenichel, Richard L.; Lewis, Alan J.; and Wolf, Milton, 4,376,124, Cl. 424-308.000.
Ferrari, Giorgio: *See*—
Godfraind, Theophile; Ghirardi, Paolo; Ferrari, Giorgio; and Casagrande, Cesare, 4,376,117, Cl. 424-211.000.
Fichtel & Sachs AG: *See*—
Itzinger, Hermann; Koller, Manfred; Jager, Erich; and Christel, Werner, 4,375,843, Cl. 188-322.190.
Filippov, Jury I.: *See*—
Belykh, Sergei I.; Davydov, Anatoly B.; Kovalenko, Igor L.; Loktionova, Lidia Y.; Moschensky, Anatoly D.; Pershin, Gely G.; Pershin, Grigory N.; Padeiskaya, Elena N.; Polukhina, Lidia M.; Ochirov, Nikolai I.; and Filippov, Jury I., 4,375,810, Cl. 128-92.00R.
Fillmore, William E., to Owens-Illinois, Inc. Child-resistant package. 4,375,859, Cl. 215-223.000.
Fillus, Gary C.: *See*—
Long, Eric L.; Fillus, Gary C.; and Paape, Kenneth L., 4,376,239, Cl. 200-159.00B.
Finnhult, Carl-Axel, to Landstingens Inkopscentral, Lic, Ekonomisk Forening. Bed bottom. 4,375,706, Cl. 5-61.000.
Fischer, Edward M., to Minnesota Mining and Manufacturing Company. Composite sewing thread of ceramic fibers. 4,375,779, Cl. 87-6.000.
Fischer, Herbert: *See*—
Zeidler, Ulrich; Fischer, Herbert; Hase, Brigitte; Moller, Hinrich; and Wilk, Hans-Christoph, 4,376,120, Cl. 424-249.000.
Flamboe, Donald, Jr.: *See*—
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Fleetwood Furniture Company: *See*—
Boerigter, Milton E., 4,375,707, Cl. 5-81.00R.
Flora, Laurence P., to Burroughs Corporation. Very fast BCD-to-binary converter. 4,376,275, Cl. 340-347.0DD.
Floyd, Ueal D. Transportable produce processing house. 4,375,855, Cl. 209-705.000.
Fluid Kinetics Corporation: *See*—
Vielbig, Leslie W., 4,375,841, Cl. 181-272.000.
Fohl, Timothy: *See*—
Bouchard, Andre C.; Scholz, John A.; and Fohl, Timothy, 4,375,953, Cl. 431-359.000.
Ford Motor Company: *See*—
Theodore, Ares N.; and Chattha, Mohinder S., 4,376,187, Cl. 525-123.000.
Forgione, Peter S.; and Henderson, William A., Jr., to Allied Corporation. Heterogeneous chemiluminescent immunoassays utilizing metallo porphyrin tag. 4,375,972, Cl. 436-531.000.
Forster, Hilmar: *See*—
Gunther, Wilhelm; and Forster, Hilmar, 4,375,857, Cl. 213-77.000.
Forward, Bernard-Edouard, to U.S. Philips Corporation. Electronic security memory including on-off controlled oscillator. 4,376,269, Cl. 331-117.00R.
Fotis, Peter: *See*—
Hoff, Glen R.; and Fotis, Peter, 4,376,064, Cl. 252-429.00B.
Frame, Norman J., to W. H. Brady Co. Electroluminescent display. 4,376,145, Cl. 428-195.000.
Frank, Arlen W., to United States of America, Agriculture. Tris(N-carbalkoxylaminomethyl)phosphine oxides and sulfides. 4,376,211, Cl. 560-158.000.
Franz, Louis J. Stamping press die support mounting. 4,375,775, Cl. 83-564.000.
Franzen, Raymond E.; Goad, Eugine W.; and Stone, Richard W. Removable cover hinge for food containers. 4,375,711, Cl. 16-252.000.
Freeman, Frank H., to Sybron Corporation. System for making direct oral impression tray. 4,375,966, Cl. 433-37.000.
Fricker, Paul, to A.G. fur Industrielle Elektronik AGIE. Erosive cutting machine for the final machining of punching and cutting tools. 4,376,241, Cl. 219-69.00W.
Friederich, Alain; Hildebrandt, Mieczylaw; Kaplan, Daniel; and Herbet, Patrick, to Thomson-Csf. Solar cell and method for the manufacture thereof. 4,375,807, Cl. 126-443.000.
Friedrich, Richard, to Robert Bosch GmbH. Control system for pressure-driven loads. 4,375,747, Cl. 60-433.000.
Friemann, Hans: *See*—
Alberts, Heinrich; Friemann, Hans; Moretto, Hans-Heinrich; and Sattlegger, Hans, 4,376,185, Cl. 525-29.000.
Frischkorn, Hans; and Schinzel, Erich, to Hoechst Aktiengesellschaft. Process for the preparation of naphthalene-1,4-dicarboxylic acid. 4,376,214, Cl. 562-484.000.
From, Joseph. Level indicating device. 4,375,765, Cl. 73-432.0HA.
Fryer, Rodney I.: *See*—
Walser, Armin; and Fryer, Rodney I., 4,376,074, Cl. 260-244.400.
Walser, Armin; and Fryer, Rodney I., 4,376,075, Cl. 260-244.400.
Fuji Electric Co. Ltd.: *See*—
Uenosono, Chikasa; Okada, Takao; Matsuki, Junya; Naito, Tadashi; Inoue, Shinichiro; and Obata, Yoshizo, 4,376,295, Cl. 361-21.000.
Fuji Electrochemical Co., Ltd.: *See*—
Okuda, Masanao; and Oishi, Wataru, 4,376,262, Cl. 318-696.000.
Fuji Jukogyo Kabushiki Kaisha: *See*—
Ohgami, Masaaki; and Matsui, Fujio, 4,375,796, Cl. 123-440.000.
Fuji Photo Film Co., Ltd.: *See*—
Kawata, Ken; Itoh, Isamu; Awata, Misao; and Masuda, Takao, 4,376,162, Cl. 430-510.000.
Fujimori, Yasuhiro: *See*—
Moriya, Ryusuke; and Fujimori, Yasuhiro, 4,376,268, Cl. 331-10.000.
Fujitsu Limited: *See*—
Kobayashi, Kazuyuki; and Kakuya, Tsutomu, 4,376,251, Cl. 307-268.000.
Mori, Haruhisa; Kamioka, Hajime; Nakano, Motoo; and Sasaki, Nobuo, 4,375,993, Cl. 148-1.500.
Fukuzaki, Hironobu: *See*—
Okamoto, Jiro; Ishigaki, Isao; Fukuzaki, Hironobu; Shimbo, Shozo; and Yoshikawa, Kiyoaki, 4,376,021, Cl. 204-159.160.
Furukawa Circuit Foil Co., Ltd.: *See*—
Nakatsugawa, Hiroshi, 4,376,154, Cl. 428-607.000.
Furukawa, Hideko: *See*—
Eguchi, Hajime; Furukawa, Hideko; and Kawakita, Tetsuya, 4,376,132, Cl. 426-537.000.
Future Teck: *See*—
Sabbota, Howard I.; and Weintraub, Marvin H., 4,375,811, Cl. 604-97.000.
Gallatin, Paul M.; and Robertson, Roger L., to Siemens-Allis, Inc. Polarized DC contactors. 4,376,271, Cl. 335-159.000.
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Angelo, Raymond W.; and Bakos, Peter, 4,376,057, Cl. 252-79.400.
Masenas, Charles J., Jr., 4,376,252, Cl. 307-482.000.
Pfeiffer, Hans C.; Langner, Guenther O.; and Sturaas, Maris A., 4,376,249, Cl. 250-396.0ML.

International Coal Refining Company: *See*—
Givens, Edwin N., 4,376,032, Cl. 208-8.0LE.

International Computers Limited: *See*—
Martin, Sidney H., 4,376,238, Cl. 200-159.00B.

International Flavors & Fragrances Inc.: *See*—
Boden, Richard M.; Dekker, Lambert; Schmitt, Frederick L.; and Van Loveren, Augustinus G., 4,376,058, Cl. 252-174.110.
Mookherjee, Braja D.; Trenkle, Robert W.; Chant, Bernard J.; van Ouwerkerk, Anton; Kamath, Venkatesh; and Mussinan, Cynthia J., 4,376,068, Cl. 252-522.00R.

International Rectifier Corporation: *See*—
Lidow, Alexander; and Herman, Thomas, 4,376,286, Cl. 357-23.000.

International Technische Handelsonderneming en Adviesbureau Itha B.V.: *See*—
Kniep, Joris, 4,375,927, Cl. 404-133.000.

Interox Chemicals Limited: *See*—
Cardy, Charles F., 4,376,153, Cl. 428-430.000.
Izzard, Keith J.; Stephenson, Reginald W.; Stanistreet, Keith C. P.; and Keeling, Iain R., 4,376,218, Cl. 568-559.000.

IPCO Corporation: *See*—
Weissman, Bernard, 4,375,965, Cl. 433-37.000.

Isa, Isao: *See*—
Yamamoto, Hideo; Isa, Isao; and Shibuya, Morioki, 4,376,099, Cl. 423-54.000.

Ishida, Katsuhiko: *See*—
Morita, Munetaka; Tuji, Takuji; and Ishida, Katsuhiko, 4,376,150, Cl. 428-320.400.

Ishigai, Tsuneo: *See*—
Yanagisawa, Osamu; Ishigai, Tsuneo; and Kiyama, Masayoshi, 4,375,762, Cl. 73-12.000.

Ishigaki, Isao: *See*—
Okamoto, Jiro; Ishigaki, Isao; Fukuzaki, Hironobu; Shimbo, Shozo; and Yoshikawa, Kiyoaki, 4,376,021, Cl. 204-159.160.

Ishizaki, Yoshihiro, to Aisin Seiki Kabushiki Kaisha. Multiple cylinder refrigeration apparatus. 4,375,749, Cl. 62-6.000.

Isono, Keinosuke, to Terumo Corporation. Sterilization of an artificial organ. 4,376,051, Cl. 210-321.300.

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Itoh, Isamu: *See*—
Kawata, Ken; Itoh, Isamu; Awata, Misao; and Masuda, Takao, 4,376,162, Cl. 430-510.000.

Itoh, Kunio; and Takamura, Tooru, to Shin-Etsu Chemical Co., Ltd. Curable epoxy resin compositions. 4,376,174, Cl. 523-456.000.

Itoh, Kunio; Oshima, Toshimichi; and Uesugi, Nobuyuki, to Shin-Etsu Chemical Co., Ltd. Rubber compositions of ethylene-propylene elastomers. 4,376,184, Cl. 524-492.000.

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Lawford, Victor N.; and Austin, Robert R., 4,375,764, Cl. 73-301.000.

Itzinger, Hermann; Koller, Manfred; Jager, Erich; and Christel, Werner, to Fichtel & Sachs AG. Piston-cylinder assembly for a vibration damper unit having an essentially tubular container. 4,375,843, Cl. 188-322.190.

Iwamaru, Sumifusa: *See*—
Date, Takasaburo; Maki, Toshimichi; Iguchi, Mitsuya; Iwamaru, Sumifusa; and Watanabe, Hisashi, 4,375,958, Cl. 432-9.000.

Izaki, Toru: *See*—
Maegawa, Toshiyuki; Yoshida, Yukihiro; Tominaga, Satoshi; and Izaki, Toru, 4,375,922, Cl. 400-70.000.

Izzard, Keith J.; Stephenson, Reginald W.; Stanistreet, Keith C. P.; and Keeling, Iain R., to Interox Chemicals Limited. Organic peroxide compositions. 4,376,218, Cl. 568-559.000.

Jachim, John A.: *See*—
Vinarcsik, Joseph E.; and Jachim, John A., 4,375,820, Cl. 134-122.00R.

Jackisch, Philip F. Stabilization of dibromostyrene. 4,376,221, Cl. 570-103.000.

Jacobsthal, Herbert K., to Honeywell Information Systems Inc. Apparatus and method for collision avoidance. 4,376,278, Cl. 340-825.500.

Jacquet, Bernard; Papantoniou, Christos; Vanlerberghe, Guy; and Mondet, Jean, to Societe Anonyme dite: L'Oreal. Copolymers of n-vinyl pyrrolidone and a vinylic, allylic or methallylic ester of a cyclic α- or β- carboxylic acid; and cosmetic compositions containing the same. 4,376,114, Cl. 424-47.000.

Jaeger: *See*—
Raffoux, Jean-Paul, 4,376,266, Cl. 324-426.000.

Jager, Erich: *See*—
Itzinger, Hermann; Koller, Manfred; Jager, Erich; and Christel, Werner, 4,375,843, Cl. 188-322.190.

Jain, Surendar M.: *See*—
Venkatsubramanian, Kalyanasundram; Jain, Surendar M.; and Giuffrida, Anthony J., 4,376,023, Cl. 204-180.00P.

Japan Atomic Energy Research Institute: *See*—
Okamoto, Jiro; Ishigaki, Isao; Fukuzaki, Hironobu; Shimbo, Shozo; and Yoshikawa, Kiyoaki, 4,376,021, Cl. 204-159.160.

Japan Carlit Co., Ltd., The: *See*—
Yamamoto, Hideo; Isa, Isao; and Shibuya, Morioki, 4,376,099, Cl. 423-54.000.

Jarrett, Boaz A.; and Mowbray, Dorian F., to Kucas Industries Limited. Fuel injection pumping apparatus. 4,375,945, Cl. 417-462.000.

Jenkins, Cecil; and Woolslayer, Joseph R., to Lee C. Moore Corporation. Oil well drilling rig mover. 4,375,892, Cl. 280-43.230.

Jennings, Thomas J.; and Lipton, Allan, to Research Corporation. Mitogenic spinal cord growth factor. 4,376,071, Cl. 260-112.00R.

Jennings, William B.: *See*—
Ciarlei, Joseph A.; Jennings, William B.; and Tobin, Curtis L., 4,375,804, Cl. 126-306.000.

Jeppsson, Bengt: *See*—
Andersson, Torsten; and Jeppsson, Bengt, 4,376,024, Cl. 204-181.00R.

Jepsen, Holger L., to Haustrups Fabriker A/S. Opening means for a container. 4,375,861, Cl. 220-274.000.

Jepson, John W.: *See*—
Lynch, Francis deS.; Reid, Walter L., Jr.; and Jepson, John W., 4,375,887, Cl. 273-32.00H.

Jo-Way Tool Company, Inc.: *See*—
Hellnick, Dieter H.; and Sterioff, Michael C., 4,375,708, Cl. 10-87.000.

Johns Hopkins University, The: *See*—
Sachs, Samuel L.; and Hill, Freeman K., 4,375,991, Cl. 134-1.000.

Johnston, Robert E.; and Kudalkar, Kishor N., to Weyerhaeuser Company. Corner and edge protector. 4,375,852, Cl. 206-586.000.

Jones, Thomas M.; and Stinson, John M., to Tennessee Valley Authority. Production of suspension fertilizers from orthophorphoric acid. 4,375,980, Cl. 71-34.000.

Joo', Louis A.; Tucker, Kenneth W.; and McCowa, Frank E., to Great Lakes Carbon Corporation. Titanium diboride-graphite composits. 4,376,029, Cl. 204-294.000.

Joseph, Joseph P.: *See*—
Dusza, John P.; Joseph, Joseph P.; and Bernstein, Seymour, 4,376,122, Cl. 424-270.000.

JPD Manufacturing Limited: *See*—
Brown, Donald J., 4,375,740, Cl. 51-425.000.

Juhasz, Tibor; and Heya, Hans E., to Exxon Research & Engineering Co. Weft insertion knitted secondary carpet backing. 4,376,146, Cl. 428-95.000.

Jursa, Stephen J. D.: *See*—
Reese, Thomas J.; Jursa, Stephen J. D.; and Thomas, Dean L., 4,375,978, Cl. 65-287.000.

Kabushiki Kaisha Mitutoyo Seisakusho: *See*—
Nishikata, Goro; and Shibukawa, Kozo, 4,375,722, Cl. 33-143.00M.

Kabushiki Kaisha Morita Seisakusho: *See*—
Tachibana, Akifumi; Watanabe, Minoru; and Shigihara, Takanori, 4,375,900, Cl. 297-330.000.

Kadomiya, Tsutomu: *See*—
Kojima, Masaharu; and Kadomiya, Tsutomu, 4,375,879, Cl. 248-73.000.

Kageyama, Hideaki: *See*—
Sugino, Kazuo; Kageyama, Hideaki; and Masumoto, Hiroki, 4,375,995, Cl. 148-12.00R.

Kagi, Bruno; Hirmann, Georg; and Luginbuhl, Rolf, to Bachofen AG. Device for detachable coupling a branchline to a pressure line. 4,375,822, Cl. 137-322.000.

Kajiyama, Yasuo; Yokoyama, Kazuo; and Yamakami, Yoshihiro, to Nissan Motor Company, Ltd. Protector for movable panel of roof structure. 4,375,899, Cl. 296-213.000.

Kakuya, Tsutomu: *See*—
Kobayashi, Kazuyuki; and Kakuya, Tsutomu, 4,376,251, Cl. 307-268.000.

Kali, Inc.: *See*—
Peck, Robert L., 4,376,155, Cl. 429-11.000.

Kalnins, Lauris, to A. O. Smith Harvestore Products, Inc. Diaphragm type breather system for sealed storage structure. 4,375,784, Cl. 99-646.00S.

Kamath, Venkatesh: *See*—
Mookherjee, Braja D.; Trenkle, Robert W.; Chant, Bernard J.; van Ouwerkerk, Anton; Kamath, Venkatesh; and Mussinan, Cynthia J., 4,376,068, Cl. 252-522.00R.

Kaminow, Ivan P.: *See*—
Alferness, Rodney C.; and Kaminow, Ivan P., 4,376,138, Cl. 427-160.000.

Kamioka, Hajime: *See*—
Mori, Haruhisa; Kamioka, Hajime; Nakano, Motoo; and Sasaki, Nobuo, 4,375,993, Cl. 148-1.500.

Kamon, Yoshiyuki; and Yokoyama, Yoshihiro, to Sony Corporation. Securing of lead wires to electro-acoustic transducers. 4,376,233, Cl. 179-115.5VC.

Kanazawa, Kyoko, administratrix: *See*—
Mori, Keijiro; Kusunoki, Shigeru; Nishii, Kazunari; Nobue, Tomotaka; and Kanazawa, Takato, deceased, 4,376,131, Cl. 426-231.000.

Kanazawa, Takato, deceased: *See*—
Mori, Keijiro; Kusunoki, Shigeru; Nishii, Kazunari; Nobue, Tomotaka; and Kanazawa, Takato, deceased, 4,376,131, Cl. 426-231.000.

Kanzaki Paper Manufacturing Co., Ltd.: *See*—
Morita, Munetaka; Tuji, Takuji; and Ishida, Katsuhiko, 4,376,150, Cl. 428-320.400.

Kao Soap Co., Ltd.: *See*—
Matsunaga, Kinjiro; Ohira, Kozo; and Nakagawa, Yunosuke, 4,376,177, Cl. 524-35.000.

Kaplan, Daniel: *See*—
Friederich, Alain; Hildebrandt, Mieczylaw; Kaplan, Daniel; and Herbet, Patrick, 4,375,807, Cl. 126-443.000.

Kappler, Felix. Mechanism for automatically closing a storage container. 4,375,863, Cl. 220-334.000.

Karl Schmidt GmbH: *See*—
Schieber, Gerhard, 4,375,782, Cl. 92-176.000.

Karol, Frederick J.: *See*—
Hamer, Anthony D.; and Karol, Frederick J., 4,376,062, Cl. 252-429.00B.

Kashiwagi, Teruya: *See*—
Ozasa, Teruaki; and Kashiwagi, Teruya, 4,376,200, Cl. 544-26.000.

Kasugai, Syouji: *See*—
Kato, Masahisa; and Kasugai, Syouji, 4,375,712, Cl. 16-282.000.

Kat, Willem: *See*—
Heijwegen, Cornelis P.; and Kat, Willem, 4,376,043, Cl. 209-167.000.

Kato, Masahisa; and Kasugai, Syouji, to Mitsubishi Denki Kabushiki Kaisha. Dust collector for industrial sewing machine. 4,375,712, Cl. 16-282.000.

Kato, Takazo: *See*—
Matsuda, Fujio; and Kato, Takazo, 4,376,205, Cl. 548-508.000.

Kawakita, Tetsuya: *See*—
Eguchi, Hajime; Furukawa, Hideko; and Kawakita, Tetsuya, 4,376,132, Cl. 426-537.000.

Kawamata, Motoo: *See*—
Oba, Masayuki; Kawamata, Motoo; Tsuboi, Hikotada; and Koga, Nobuhito, 4,376,206, Cl. 548-546.000.

Kawamura, Yasuo: *See*—
Ura, Yasukazu; Sakata, Gojyo; Makino, Kenji; Kawamura, Yasuo; Kusano, Kazuya; and Satow, Jun, 4,376,202, Cl. 544-354.000.

Kawara, Toshio: *See*—
Yano, Shozo; Hujinaga, Yasuhiro; Kawara, Toshio; and Komoto, Akira, 4,375,838, Cl. 177-50.000.

Kawata, Ken; Itoh, Isamu; Awata, Misao; and Masuda, Takao, to Fuji Photo Film Co., Ltd. Heat-developable photosensitive material with antihalation layer. 4,376,162, Cl. 430-510.000.

Kawazura, Hiroshi: *See*—
Ozaki, Shoichiro; Kobayashi, Hideya; Mori, Haruki; Kawazura, Hiroshi; Okazaki, Yutaka; Kitano, Takafumi; Kumakura, Mikio; and Nakano, Takuo, 4,376,119, Cl. 424-246.000.

Keeling, Iain R.: *See*—
Izzard, Keith J.; Stephenson, Reginald W.; Stanistreet, Keith C. P.; and Keeling, Iain R., 4,376,218, Cl. 568-559.000.

Keller, Reimund: *See*—
Schubert, Peter; Pfeifer, Hermann; Hermann, Volker; Keller, Reimund; and Schulz, Eckhard, 4,376,086, Cl. 264-42.000.

Kellogg, Michael S., to Pfizer Inc. Bis-esters of 1,1-alkanediols with 6-beta-hydroxymethylpenicillanic acid 1,1-dioxide. 4,376,076, Cl. 260-245.20R.

Kelly, Leonard J.: *See*—
Knopp, Arthur A.; and Kelly, Leonard J., 4,375,964, Cl. 433-29.000.

Kemiko SA: *See*—
Kovacs, Nandor, 4,376,048, Cl. 210-221.100.

Kemira Oy: *See*—
Makinen, Pekka I., 4,375,989, Cl. 106-300.000.

Kent, William C., to Western Electric Company, Inc. Apparatus for assembling apertured members onto an array of terminal pins. 4,375,719, Cl. 29-747.000.

Keran, Vitie P.; and Baker, Alan C., to Direct Reduction Corporation, The. System for recycling char in iron oxide reducing kilns. 4,375,883, Cl. 266-91.000.

Kester, William W.: *See*—
Brackett, Neil C.; and Kester, William W., 4,375,772, Cl. 81-462.000.

Keuffel & Esser Company: *See*—
Spechler, Daniel S., 4,376,158, Cl. 430-291.000.
Spechler, Daniel S., 4,376,159, Cl. 430-293.000.

Khattab, Ghazi M. A., to Allied Corporation. High melt strength composition comprising modified polycaprolactam and impact modifier. 4,376,188, Cl. 525-183.000.

Kienzle, Frank, to Hoffmann-La Roche Inc. Antiallerigically-active imidazothienopyrimidine derivatives. 4,376,121, Cl. 424-251.000.

Kim, Chang J.: *See*—
Sartori, Guido; Kim, Chang J.; Melchior, Michael T.; and Savage, David W., 4,376,101, Cl. 423-223.000.
Thaler, Warren A.; Sartori, Guido; and Kim, Chang J., 4,376,102, Cl. 423-223.000.

Kimoto, Kyoji; and Ebisawa, Mikio, to Asahi Kasei Kogyo Kabushiki Kaisha. Method for producing a fluorinated copolymer membrane. 4,376,140, Cl. 427-244.000.

King-Seeley Thermos Co.: *See*—
Lanzani, Emanuele, 4,375,756, Cl. 62-347.000.

King, Sr., Jack H.: *See*—
Armstrong, Joseph; Gordon, Robert L.; Walsh, William R.; and King, Sr., Jack H., 4,375,716, Cl. 29-404.000.

Kiralyhidi, Tibor: *See*—
Piukovich, Sandor; Stankovics, Lajos; and Kiralyhidi, Tibor, 4,376,129, Cl. 426-64.000.

Kitano, Takafumi: *See*—
Ozaki, Shoichiro; Kobayashi, Hideya; Mori, Haruki; Kawazura, Hiroshi; Okazaki, Yutaka; Kitano, Takafumi; Kumakura, Mikio; and Nakano, Takuo, 4,376,119, Cl. 424-246.000.

Kiuchi, Masayoshi; Uchidoi, Masanori; and Murakami, Hiroyasu, to Canon Kabushiki Kaisha. Power source voltage checking device particularly for checking the voltage of a battery in a camera. 4,376,265, Cl. 324-426.000.

Kiyama, Masayoshi: *See*—
Yanagisawa, Osamu; Ishigai, Tsuneo; and Kiyama, Masayoshi, 4,375,762, Cl. 73-12.000.

Kleemann, Axel: *See*—
Deller, Klaus; Kleemann, Axel; Martens, Jurgen; and Weigel, Horst, 4,376,215, Cl. 564-198.000.

Kleinschmidt, Peter, to Siemens Aktiengesellschaft. Method for pulse triggering of a piezo-electric sound-transmitting transducer. 4,376,255, Cl. 310-317.000.

Klockner-Werke AG: *See*—
Chitil, Manfred, 4,375,982, Cl. 75-25.000.

Kmonk, Stanley; and Cadwell, Dennis J., to Westinghouse Electric Corp. Nuclear fuel assembly wear sleeve. 4,376,092, Cl. 376-353.000.

Kniep, Joris, to International Technische Handelsonderneming en Adviesbureau Itha B.V. Method and device for intermittently exerting forces on soil. 4,375,927, Cl. 404-133.000.

Knopp, Arthur A.; and Kelly, Leonard J., to Syntex (U.S.A.) Inc. Dental instrument having a lamp assembly suspension including vibration and thermal isolation means. 4,375,964, Cl. 433-29.000.

Kobayashi, Hideya: *See*—
Ozaki, Shoichiro; Kobayashi, Hideya; Mori, Haruki; Kawazura, Hiroshi; Okazaki, Yutaka; Kitano, Takafumi; Kumakura, Mikio; and Nakano, Takuo, 4,376,119, Cl. 424-246.000.

Kobayashi, Hiroshi: *See*—
Machida, Haruhiko; and Kobayashi, Hiroshi, 4,375,739, Cl. 51-58.000.
Teramura, Nobuyasu; and Kobayashi, Hiroshi, 4,376,293, Cl. 360-71.000.

Kobayashi, Kazuyuki; and Kakuya, Tsutomu, to Fujitsu Limited. Waveform shaping circuit. 4,376,251, Cl. 307-268.000.

Kobelt, Jacob. Resilient control link assembly. 4,375,771, Cl. 74-470.000.

Koeller, William J.: *See*—
Renn, Charles F.; and Koeller, William J., 4,376,243, Cl. 219-514.000.

Koga, Nobuhito: *See*—
Oba, Masayuki; Kawamata, Motoo; Tsuboi, Hikotada; and Koga, Nobuhito, 4,376,206, Cl. 548-546.000.

Kohl, Paul A., to Bell Telephone Laboratories, Incorporated. Electrodeposition of nickel. 4,376,018, Cl. 204-49.000.

Kojima, Masaharu; and Kadomiya, Tsutomu, to Nifco Inc. Cable clip. 4,375,879, Cl. 248-73.000.

Koller, Manfred: *See*—
Itzinger, Hermann; Koller, Manfred; Jager, Erich; and Christel, Werner, 4,375,843, Cl. 188-322.190.

Kolomayets, George: *See*—
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Komoto, Akira: *See*—
Yano, Shozo; Hujinaga, Yasuhiro; Kawara, Toshio; and Komoto, Akira, 4,375,838, Cl. 177-50.000.

Kondo, Kazuo: *See*—
Takani, Akio; and Kondo, Kazuo, 4,376,168, Cl. 501-1.000.

Kondur, Nicholas, Jr.: *See*—
Hidaka, Kenjiro; and Kondur, Nicholas, Jr., 4,375,923, Cl. 400-82.000.

Koppers Company, Inc.: *See*—
Gormley, William T., 4,376,223, Cl. 585-360.000.
Gormley, William T., 4,376,224, Cl. 585-360.000.

Korger, Heinz, to Carl Stahl GmbH & Co. Releasable locking mechanism for safety belts. 4,375,714, Cl. 24-230.0AL.

Korosec, Philip S.; and Litt Fredric A., to Elco Corporation. Process for making highly sulfurized oxymolybdenum organo compounds. 4,376,055, Cl. 252-32.70E.

Koshiishi, Shinichiro: *See*—
Takahashi, Akira; and Koshiishi, Shinichiro, 4,375,912, Cl. 354-33.000.

Koshugi, Junichi, to Kureha Kagaku Kogyo Kabushiki Kaisha. Shaped material of chitin derivatives. 4,376,199, Cl. 536-20.000.

Kotani, Shintaro; Abiko, Ichimatsu; Tokunaga, Yukio; and Tateishi, Kazuyoshi, to Oki Electric Industry Co., Ltd.; and Nippon Telegraph and Telephone Public Corporation. Optical print head with graded

index fiber arrays for optical printing devices. 4,376,282, Cl. 346-107.00R.

Koube, Shinji: *See*—
Nohira, Hiroyuki; Terunuma, Daiyo; and Koube, Shinji, 4,376,213, Cl. 562-401.000.

Kovacs, Nandor, to Kemiko SA. Sludge collector for use in a settling basin. 4,376,048, Cl. 210-221.100.

Kovalenko, Igor L.: *See*—
Belykh, Sergei I.; Davydov, Anatoly B.; Kovalenko, Igor L.; Loktionova, Lidia Y.; Moschensky, Anatoly D.; Pershin, Gely G.; Pershin, Grigory N.; Padeiskaya, Elena N.; Polukhina, Lidia M.; Ochirov, Nikolai I.; and Filippov, Jury I., 4,375,810, Cl. 128-92.00R.

Kozloff, Lloyd M.; and Schnell, Russell C., to University Patents, Inc. Protection of plants against frost injury using ice nucleation-inhibiting species-specific bacteriophages. 4,375,734, Cl. 47-2.000.

Kraeling, John B., Jr.: *See*—
Netkowicz, Robert J.; Schnall, Ira H.; and Kraeling, John B., Jr., 4,376,091, Cl. 376-283.000.

Krass, Dennis K., to PPG Industries, Inc. Method for controlling weed growth using herbicidally 5-(2-chloro-4-trifluoromethyl)-, or (4-trifluoromethyl or 2,6-dichloro-4-trifluoromethylphenoxy)-2-nitro-substituted carbonyl oxime-O-alkyl ethers. 4,375,981, Cl. 71-121.000.

Krogsrud, Harald, to Elkem A/S. Means for transporting/rotating the pot of a smelting furnace. 4,375,960, Cl. 432-239.000.

Krone, Uwe; and Moeller, Klaus, to Nico-Pyrotechnik Hanns-Juergen Diederichs KG. Smoke composition. 4,376,001, Cl. 149-19.900.

Kruger, Roland: *See*—
Wolter, Erhard; Wiegleb, Ludwig; Kruger, Roland; Ladwig, Heinz; and Ehrlinger, Klaus, 4,376,109, Cl. 423-659.000.

Kubota, Ltd.: *See*—
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Kucas Industries Limited: *See*—
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Kudalkar, Kishor N.: *See*—
Johnston, Robert E.; and Kudalkar, Kishor N., 4,375,852, Cl. 206-586.000.

Kulhanek, Antonin: *See*—
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Kulzer & Co. GmbH: *See*—
Schaefer, Roland, 4,375,967, Cl. 433-199.000.

Kumakura, Mikio: *See*—
Ozaki, Shoichiro; Kobayashi, Hideya; Mori, Haruki; Kawazura, Hiroshi; Okazaki, Yutaka; Kitano, Takafumi; Kumakura, Mikio; and Nakano, Takuo, 4,376,119, Cl. 424-246.000.

Kumar, Surinder, to Quaker Oats Company, The. Low-cholesterol sausage analog and process therefor. 4,376,134, Cl. 426-656.000.

Kumazawa, Toshihiko: *See*—
Watanabe, Fumio; Mitsuhata, Masashi; and Kumazawa, Toshihiko, 4,376,209, Cl. 549-534.000.

Kunz, Peter J., to RCA Corporation. Limp-stream method for selectively etching integral cathode substrate and support. 4,376,009, Cl. 156-640.000.

Kureha Kagaku Kogyo Kabushiki Kaisha: *See*—
Koshugi, Junichi, 4,376,199, Cl. 536-20.000.

Kurinsky, Roger A.; Alexander, Fred D.; and Holzkopf, Michael E., to Ekco Products, Inc. Container with dome cover. 4,375,862, Cl. 220-293.000.

Kusano, Kazuya: *See*—
Ura, Yasukazu; Sakata, Gojyo; Makino, Kenji; Kawamura, Yasuo; Kusano, Kazuya; and Satow, Jun, 4,376,202, Cl. 544-354.000.

Kusunoki, Shigeru: *See*—
Mori, Keijiro; Kusunoki, Shigeru; Nishii, Kazunari; Nobue, Tomotaka; and Kanazawa, Takato, deceased, 4,376,131, Cl. 426-231.000.

Kyatt, Victor F., to Hurri-Kleen Corporation. Apparatus for cleaning machinery parts and the like. 4,375,819, Cl. 134-105.000.

La Technique Integrale, Societe Anonyme Francaise: *See*—
Druet, Clair, 4,375,770, Cl. 74-424.80A.

Labianca, Michele. Catheters for shunting systems for the treatment of hydrocephalus. 4,375,816, Cl. 604-8.000.

Lacey, Raymond D.: *See*—
Savage, Donald S.; and Lacey, Raymond D., 4,375,760, Cl. 72-391.000.

Ladwig, Heinz: *See*—
Wolter, Erhard; Wiegleb, Ludwig; Kruger, Roland; Ladwig, Heinz; and Ehrlinger, Klaus, 4,376,109, Cl. 423-659.000.

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Seilly , Alec H.; and Laity, Thomas, 4,375,793, Cl. 123-90.110.

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Hornby, William E.; and Morris, David L., 4,376,165, Cl. 435-188.000.
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Nichols, Donald F., 4,376,050, Cl. 210-248.000.
Moschensky, Anatoly D.: *See*—
Belykh, Sergei I.; Davydov, Anatoly B.; Kovalenko, Igor L.; Loktionova, Lidia Y.; Moschensky, Anatoly D.; Pershin, Gely G.; Pershin, Grigory N.; Padeinkaya, Elena N.; Polukhina, Lidia M.; Ochirov, Nikolai I.; and Filippov, Jury I., 4,375,810, Cl. 128-92.00R.
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Smith, Joseph J.; and Moseley, Thomas L., 4,376,027, Cl. 204-195.00R.
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Jarrett, Bnaz A.; and Mowbray, Dorian F., 4,375,945, Cl. 417-462.000.
Mueller, Karl-Hans; and Barthel, Walter, to Degussa Aktiengesellschaft. Bituminous binder, process for its production and use. 4,375,988, Cl. 106-273.00R.
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Beck, Martin; Hoht, Wolfgang; and Mushold, Udo, 4,375,768, Cl. 73-861.230.
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Mookherjee, Braja D.; Trenkle, Robert W.; Chant, Bernard J.; van Ouwerkerk, Anton; Kamath, Venkatesh; and Mussinan, Cynthia J., 4,376,068, Cl. 252-522.00R.
Muys, Louis G., to Strombecker Corporation. Jump rope. 4,375,886, Cl. 272-75.000.
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Myers, George D., deceased, 4,376,038, Cl. 208-113.000.
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Nahir, David: *See*—
Feller, Ron; Nahir, David; and Coble, Charlie G., 4,375,853, Cl. 209-640.000.
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Tanaka, Chiaki; Nakashima, Shinobu; and Naito, Nagayoshi, 4,376,194, Cl. 528-288.000.
Naito, Tadashi: *See*—
Uenosono, Chikasa; Okada, Takao; Matsuki, Junya; Naito, Tadashi; Inoue, Shinichiro; and Obata, Yoshizo, 4,376,295, Cl. 361-21.000.
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Matsunaga, Kinjiro; Ohira, Kozo; and Nakagawa, Yunosuke, 4,376,777, Cl. 524-35.000.
Nakamura, Hisao: *See*—
Miyazaki, Masahiro; and Nakamura, Hisao, 4,376,257, Cl. 313-417.000.
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Imasu, Kenichiro; Nakazawa, Akira; Yamane, Masataka; and Takahashi, Kengo, 4,375,753, Cl. 62-160.000.
Nanao, Teruaki, to Kubota, Ltd. Control value. 4,375,821, Cl. 137-239.000.
Narasaka, Shin: *See*—
Otsuka, Kazuo; Narasaka, Shin; and Hasegawa, Shumpei, 4,375,797, Cl. 123-440.000.
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Evans, David M.; and Weightman, Barry O., 4,375,703, Cl. 3-1.910.
Nauheimer, James F., to Container Corporation of America. Container. 4,375,846, Cl. 206-195.000.
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New Zealand Milk Products, Inc.: *See*—
Connolly, Philip B., 4,376,072, Cl. 260-120.000.
Newkirk, Mark C.; and Tamagni, Albert J., to Maul Technology Corporation. Glass forming apparatus. 4,375,979, Cl. 65-360.000.
NGK Spark Plugs Co., Ltd.: *See*—
Takani, Akio; and Kondo, Kazuo, 4,376,168, Cl. 501-1.000.
Nichols, Donald F., to Morrison-Knudsen Company, Inc. Surge devices for liquid-solid separators. 4,376,050, Cl. 210-248.000.
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Krone, Uwe; and Moeller, Klaus, 4,376,001, Cl. 149-19.900.
Nifco Inc.: *See*—
Kojima, Masaharu; and Kadomiya, Tsutomu, 4,375,879, Cl. 248-73.000.
Nippon Atsudenki Kabushiki Kaisha: *See*—
Uchida, Ryuichi; Terasaki, Kaoru; and Nishino, Takeo, 4,376,304, Cl. 369-136.000.
Nippon Electric Co., Ltd.: *See*—
Seki, Masafumi, 4,375,910, Cl. 350-375.000.
Nippon Gakki Seizo Kabushiki Kaisha: *See*—
Nishimoto, Tetsuo, 4,375,777, Cl. 84-1.190.
Okamoto, Eisaku, 4,375,776, Cl. 84-1.030.
Nippon Kokan Kabushiki Kaisha: *See*—
Date, Takasaburo; Maki, Toshimichi; Iguchi, Mitsuya; Iwamaru, Sumifusa; and Watanabe, Hisashi, 4,375,958, Cl. 432-9.000.
Nippon Nenryo Company Ltd.: *See*—
Yanagisawa, Osamu; Ishigai, Tsuneo; and Kiyama, Masayoshi, 4,375,762, Cl. 73-12.000.
Nippon Shokubai Kagaku Kogyo Co., Ltd.: *See*—
Watanabe, Fumio; Mitsuhata, Masashi; and Kumazawa, Toshihiko, 4,376,209, Cl. 549-534.000.
Nippon Steel Corporation: *See*—
Sugino, Kazuo; Kageyama, Hideaki; and Masumoto, Hiroki, 4,375,995, Cl. 148-12.00R.
Nippon Telegraph and Telephone Public Corporation: *See*—
Kotani, Shintaro; Abiko, Ichimatsu; Tokunaga, Yukio; and Tateishi, Kazuyoshi, 4,376,282, Cl. 346-107.00R.
Nippondenso Co., Ltd.: *See*—
Enomoto, Katsunori; Muramatsu, Tomomitsu; and Maeda, Shiro, 4,375,873, Cl. 236-86.000.
Nishii, Kazunari: *See*—
Mori, Keijiro; Kusunoki, Shigeru; Nishii, Kazunari; Nobue, Tomotaka; and Kanazawa, Takato, deceased, 4,376,131, Cl. 426-231.000.
Nishikata, Goro; and Shibukawa, Kozo, to Kabushiki Kaisha Mitutoyo Seisakusho. Vernier caliper. 4,375,722, Cl. 33-143.00M.
Nishikawa, Seiichi; and Honda, Makoto, to Dai Nippon Insatsu Kabushiki Kaisha. Magnetic recording structure. 4,376,006, Cl. 156-233.000.
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Nishimura, Takamoto: *See*—
Matuda, Hiroshi; Nishimura, Takamoto; Tanaka, Yoshiyuki; and Hatabu, Yoshihiko, 4,376,105, Cl. 423-400.000.
Nishino, Takeo: *See*—
Uchida, Ryuichi; Terasaki, Kaoru; and Nishino, Takeo, 4,376,304, Cl. 369-136.000.
Nishman, Paul J., to Spencer Products Company. Heating system. 4,375,806, Cl. 126-436.000.
Nissan Chemical Industries Ltd.: *See*—
Ohyama, Eiji; Nagai, Hiroo; and Yoshimura, Masahito, 4,376,212, Cl. 560-205.000.
Ura, Yasukazu; Sakata, Gojyo; Makino, Kenji; Kawamura, Yasuo; Kusano, Kazuya; and Satow, Jun, 4,376,202, Cl. 544-354.000.
Nissan Motor Company, Ltd.: *See*—
Kajiyama, Yasuo; Yokoyama, Kazuo; and Yamakami, Yoshihiro, 4,375,899, Cl. 296-213.000.
Ohgami, Masaaki; and Matsui, Fujio, 4,375,796, Cl. 123-440.000.
Yamane, Ken, 4,375,748, Cl. 60-611.000.
Nobue, Tomotaka: *See*—
Mori, Keijiro; Kusunoki, Shigeru; Nishii, Kazunari; Nobue, Tomotaka; and Kanazawa, Takato, deceased, 4,376,131, Cl. 426-231.000.
Nohira, Hiroyuki; Terunuma, Daiyo; and Koube, Shinji, to Sumitomo Chemical Company, Limited. Method for optical resolution of 2-(4-chlorophenyl)-3-methylbutanoic acid. 4,376,213, Cl. 562-401.000.
Noland, Joseph R.: *See*—
Stocking, George E.; Noland, Joseph R.; and Sidebottom, Donald L., 4,375,752, Cl. 62-150.000.
Noranda Mines Limited: *See*—
Gauvin, William H., 4,376,010, Cl. 159-48.100.
Norris, Floyd E.: *See*—
Tai, Harold Y.; and Norris, Floyd E., 4,375,902, Cl. 297-408.000.
North American Manufacturing Company, The: *See*—
Hoffman, Alan R.; and Ryan, Thomas J., 4,376,026, Cl. 204-195.00S.
Northern Telecom Limited: *See*—
Richardson, Walter L., 4,375,875, Cl. 242-156.200.
Norton-Berry, Philip: *See*—
Cowen, Geoffrey; Norton-Berry, Philip; and Steel, Margaret L., 4,376,084, Cl. 264-8.000.
Norwood Industries, Inc.: *See*—
McCartney, John, 4,376,148, Cl. 428-198.000.
Novak, Peter: *See*—
Briner, Emil; Novak, Peter; and Gasser, Hermann, 4,375,744, Cl. 57-96.000.
Novak, Raymond F.; and Doyle, Richard, to Duo-Fast Corporation. Electric fastener driving tool. 4,375,867, Cl. 227-109.000.
Nuesch, Jakob: *See*—
Schupp, Thomas; Traxler, Peter; and Nuesch, Jakob, 4,376,166, Cl. 435-253.000.
Oba, Masayuki; Kawamata, Motoo; Tsuboi, Hikotada; and Koga, Nobuhito, to Mitsui Toatsu Chemicals, Inc. N-Alkenylphenylmaleimides and N,N'-[alkenylene phenylene]bismaleimides for the same. 4,376,206, Cl. 548-546.000.
Obata, Yoshizo: *See*—
Uenosono, Chikasa; Okada, Takao; Matsuki, Junya; Naito, Tadashi; Inoue, Shinichiro; and Obata, Yoshizo, 4,376,295, Cl. 361-21.000.
Occidental Chemical Corporation: *See*—
Lindert, Andreas, 4,376,000, Cl. 148-6.15R.
Miller, George T., 4,376,112, Cl. 424-17.000.
Ochirov, Nikolai I.: *See*—
Belykh, Sergei I.; Davydov, Anatoly B.; Kovalenko, Igor L.; Loktionova, Lidia Y.; Moschensky, Anatoly D.; Pershin, Gely G.; Pershin, Grigory N.; Padeiskaya, Elena N.; Polukhina, Lidia M.; Ochirov, Nikolai I.; and Filippov, Jury I., 4,375,810, Cl. 128-92.00R.

Oderstig, Ingvar: *See*—
Lindskog, Nils; Oderstig, Ingvar; and Berg, Lars, 4,376,245, Cl. 219-552.000.

O'Donnell, Frederick J.: *See*—
Leonberger, Frederick J.; and O'Donnell, Frederick J., 4,376,285, Cl. 357-17.000.

Ohashi, Ken: *See*—
Tawara, Yoshio; Chino, Tetsuichi; and Ohashi, Ken, 4,375,996, Cl. 148-31.570.

Ohgami, Masaaki; and Matsui, Fujio, to Fuji Jukogyo Kabushiki Kaisha; and Nissan Motor Co., Ltd. Air-fuel ratio control system. 4,375,796, Cl. 123-440.000.

Ohira, Kozo: *See*—
Matsunaga, Kinjiro; Ohira, Kozo; and Nakagawa, Yunosuke, 4,376,177, Cl. 524-35.000.

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Okuda, Masanao; and Oishi, Wataru, 4,376,262, Cl. 318-696.000.

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Okamoto, Eisaku, to Nippon Gakki Seizo Kabushiki Kaisha. Tone property control device in electronic musical instrument. 4,375,776, Cl. 84-1.030.

Okamoto, Jiro; Ishigaki, Isao; Fukuzaki, Hironobu; Shimbo, Shozo; and Yoshikawa, Kiyoaki, to Japan Atomic Energy Research Institute; and Taki Chemical Co. Ltd. Process for producing a water-soluble vinyl polymer. 4,376,021, Cl. 204-159.160.

Okazaki, Yutaka: *See*—
Ozaki, Shoichiro; Kobayashi, Hideya; Mori, Haruki; Kawazura, Hiroshi; Okazaki, Yutaka; Kitano, Takafumi; Kumakura, Mikio; and Nakano, Takuo, 4,376,119, Cl. 424-246.000.

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Kotani, Shintaro; Abiko, Ichimatsu; Tokunaga, Yukio; and Tateishi, Kazuyoshi, 4,376,282, Cl. 346-107.00R.

Okuda, Masanao; and Oishi, Wataru, to Fuji Electrochemical Co., Ltd. Method and apparatus for controlling a digital controlled brushless motor. 4,376,262, Cl. 318-696.000.

Okura, Eiji, to Diesel Kiki Company, Ltd. Vehicle temperature control apparatus. 4,375,754, Cl. 62-180.000.

Olsen, Ronald H., to Microlife Technics, Inc. Process for preparing broad host range small plasmid rings as cloning vehicles. 4,376,164, Cl. 435-172.000.

Olson, John R., to Dynes/Rivett Inc. Tilting cam, rotating barrel pump. 4,375,942, Cl. 417-222.000.

Olympus Optical Company Ltd.: *See*—
Suwaki, Toshitaka; and Ando, Otaro, 4,375,818, Cl. 128-660.000.

Oosterling, Pieter A.; and Van Zweeden, Adriaan, to Expert N.V. Device for baling crop. 4,375,786, Cl. 100-189.000.

Orlob, Douglas A. Optical sight. 4,375,725, Cl. 33-233.000.

Orthoband Company, Inc.: *See*—
DeWoskin, Irvin S., 4,375,962, Cl. 433-5.000.

Ortner, Arthur A.: *See*—
Leotta, Samuel S.; Petro, James G.; and Ortner, Arthur A., 4,375,874, Cl. 242-55.300.

Osakabe, Kuniharu; Yoshimi, Isao; and Sakurai, Soichi, to Hitachi, Ltd. Magnetic field generators for use in electromagnetic focusing type cathode ray tubes. 4,376,272, Cl. 335-211.000.

Osawa Precision Industries, Ltd.: *See*—
Miller, Gary E.; and Hasegawa, Iwao, 4,375,914, Cl. 354-82.000.

Oshima, Toshimichi: *See*—
Itoh, Kunio; Oshima, Toshimichi; and Uesugi, Nobuyuki, 4,376,184, Cl. 524-492.000.

Osthaus, Georg: *See*—
Zucker, Friedrich J.; Osthaus, Georg; Hanig, Gernot; and Culemeyer, Karl, 4,376,079, Cl. 260-413.000.

Oswald, Alexis A.: *See*—
Rossi, Albert; Rehrer, David H.; Oswald, Alexis A.; Lewtas, Kenneth; and Tack, Robert D., 4,375,973, Cl. 44-62.000.

Otsuka, Kazuo; Narasaka, Shin; and Hasegawa, Shumpei, to Honda Giken Kogyo Kabushiki Kaisha. Air/fuel ratio feedback control system for internal combustion engines. 4,375,797, Cl. 123-440.000.

Otsuka, Kazuo; Narasaka, Shin; and Hasegawa, Shumpei, to Honda Giken Kogyo Kabushiki Kaisha. Control system for internal combustion engines, provided with an exhaust gas recirculation control having a fail safe function. 4,375,800, Cl. 123-571.000.

Outboard Marine Corporation: *See*—
Billingsley, Henry C., 4,375,795, Cl. 123-187.50R.

Owens-Corning Fiberglas Corporation: *See*—
Greaves, Gerald G., Jr., 4,375,860, Cl. 220-1.00B.

Owens-Illinois, Inc.: *See*—
Fillmore, William E., 4,375,859, Cl. 215-223.000.

Ozaki, Shoichiro; Kobayashi, Hideya; Mori, Haruki; Kawazura, Hiroshi; Okazaki, Yutaka; Kitano, Takafumi; Kumakura, Mikio; and Nakano, Takuo, to Mitsui Toatsu Chemicals, Inc. Benzothiazine derivative. 4,376,119, Cl. 424-246.000.

Ozasa, Teruaki; and Kashiwagi, Teruya, to Yamanouchi Pharmaceutical Co. Ltd. Heterocyclic thiomethylation of the 3-position of 7-aminocephalosporanic acids. 4,376,200, Cl. 544-26.000.

Paape, Kenneth L.: *See*—
Long, Eric L.; Fillus, Gary C.; and Paape, Kenneth L., 4,376,239, Cl. 200-159.00B.

PaccarInc.: *See*—
Stephens, Donald L., 4,375,898, Cl. 296-1.00S.

Padeiskaya, Elena N.: *See*—
Belykh, Sergei I.; Davydov, Anatoly B.; Kovalenko, Igor L.; Loktionova, Lidia Y.; Moschensky, Anatoly D.; Pershin, Gely G.; Pershin, Grigory N.; Padeiskaya, Elena N.; Polukhina, Lidia M.; Ochirov, Nikolai I.; and Filippov, Jury I., 4,375,810, Cl. 128-92.00R.

Page, John S., Jr. Well pump. 4,375,946, Cl. 417-566.000.

Pagel, Paul V.: *See*—
Hamler, Donald H.; and Pagel, Paul V., 4,375,933, Cl. 411-112.000.

Paliwoda, Kenneth J., to Metal Building Insulation-Southwest, Inc. Insulation system for metal buildings and the like. 4,375,741, Cl. 52-127.100.

Paliwoda, Kenneth J., to Metal Building Insulation-Southwest, Inc. Roof insulation support system. 4,375,742, Cl. 52-404.000.

Pan, Hsi-Lung: *See*—
Wetzel, William H.; Pan, Hsi-Lung; Goodwin, Robert J.; and Wilkinson, John E., 4,376,220, Cl. 568-776.000.

Pancotti, Santino: *See*—
Lovera, Bruno; and Pancotti, Santino, 4,375,940, Cl. 416-114.000.

Papantoniou, Christos: *See*—
Jacquet, Bernard; Papantoniou, Christos; Vanlerberghe, Guy; and Mondet, Jean, 4,376,114, Cl. 424-47.000.

Papay, Roger, to Messier-Hispano-Bugatti. Device for testing rims of wheels. 4,375,766, Cl. 73-809.000.

Papierfabricken Van Houtem & Palm B.V.: *See*—
Dokter, Hendrik D.; Hildering, Roelof; and Mackor, Adrianus, 4,376,264, Cl. 324-316.000.

Papst-Motoren KG: *See*—
von der Heide, Johann; Muller, Rolf; and Doemen, Benno, 4,376,261, Cl. 318-254.000.

Parker, Carl V.: *See*—
Chambers, Al L.; and Parker, Carl V., 4,375,845, Cl. 198-570.000.

Parker, Robert P.: *See*—
Shanley, Robert L., II; and Parker, Robert P., 4,376,288, Cl. 358-39.000.

Parrotta, Michael A., to Moore Business Forms, Inc. Pressure threshold adhesive. 4,376,151, Cl. 428-323.000.

Pask, George, to Rolls-Royce Limited. Seal between a turbine rotor of a gas turbine engine and associated static structure of the engine. 4,375,891, Cl. 277-3.000.

PATCO: *See*—
Dorman, Hugh H., 4,375,715, Cl. 29-148.40A.

Patel, Mulji; and Culbertson, Samuel W., to Binks Manufacturing Company. Apparatus for atomization in electrostatic coating and method. 4,376,135, Cl. 427-31.000.

Paulos, James P., to Bemis Company, Inc. Skin packaging. 4,375,851, Cl. 206-471.000.

Paulovitz, Albert C.: *See*—
McAdams, Hugh P., Jr.; and Paulovitz, Albert C., 4,375,727, Cl. 33-366.000.

Peck, Robert L., to Kali, Inc. Thermal galvanic cells. 4,376,155, Cl. 429-11.000.

Peppler, William, to Chore-Time Equipment, Inc. Trough feeder. 4,375,791, Cl. 119-52.0AF.

Perlman, Marvin; and Goldfine, Milton, to Trans-Cryption, Inc. Personal identification system. 4,376,279, Cl. 235-380.000.

Pershin, Gely G.: *See*—
Belykh, Sergei I.; Davydov, Anatoly B.; Kovalenko, Igor L.; Loktionova, Lidia Y.; Moschensky, Anatoly D.; Pershin, Gely G.; Pershin, Grigory N.; Padeiskaya, Elena N.; Polukhina, Lidia M.; Ochirov, Nikolai I.; and Filippov, Jury I., 4,375,810, Cl. 128-92.00R.

Pershin, Grigory N.: *See*—
Belykh, Sergei I.; Davydov, Anatoly B.; Kovalenko, Igor L.; Loktionova, Lidia Y.; Moschensky, Anatoly D.; Pershin, Gely G.; Pershin, Grigory N.; Padeiskaya, Elena N.; Polukhina, Lidia M.; Ochirov, Nikolai I.; and Filippov, Jury I., 4,375,810, Cl. 128-92.00R.

Petro, James G.: *See*—
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Petty, Herbert E.: *See*—
Turbett, Robert J.; Ashcraft, Arnold C.; and Petty, Herbert E., 4,376,180, Cl. 524-188.000.

Pews, Richard G., to Dow Chemical Company, The. Preparation of 2-alkylpyrimidines. 4,376,201, Cl. 544-242.000.

Pfeifer, Hermann: *See*—
Schubert, Peter; Pfeifer, Hermann; Hermann, Volker; Keller, Reimund; and Schulz, Eckhard, 4,376,086, Cl. 264-42.000.

Pfeiffer, Hans C.; Langner, Guenther O.; and Sturans, Maris A., to International Business Machines Corporation. Variable axis electron beam projection system. 4,376,249, Cl. 250-396.0ML.

Pfizer Inc.: *See*—
Kellogg, Michael S., 4,376,076, Cl. 260-245.20R.
Weeks, Paul D., 4,376,204, Cl. 548-210.000.

Phillips Petroleum Company: *See*—
Sherk, Fred T.; and Edmonds, James T., Jr., 4,376,196, Cl. 528-481.000.

Phillips, Talmadge V.: *See*—
Buff, Grier E.; and Phillips, Talmadge V., 4,376,242, Cl. 219-97.000.

Picco, William A. Portable golf equipment case. 4,375,847, Cl. 206-315.00R.

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Rivest, Ronald L., 4,376,299, Cl. 364-900.000.
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Schultz, William J.; Etter, Margaret C.; Pocius, Alphonsus V.; and Smith, Samuel, 4,376,190, Cl. 525-333.100.
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Poliniak, Eugene S.; and Datta, Pabitra, to RCA Corporation. Processing of video discs. 4,376,087, Cl. 264-107.000.
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Posten, Robert J., to Airwick Industries, Inc. Floor care compositions. 4,376,175, Cl. 523-501.000.
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Krass, Dennis K., 4,375,981, Cl. 71-121.000.
Reese, Thomas J.; Jursa, Stephen J. D.; and Thomas, Dean L., 4,375,978, Cl. 65-287.000.
Prather, Richard A., to Upjohn Company, The. Process for preparing a particle board using a self-releasing binder comprising a polyisocyanate and a sulfur-containing release agent. 4,376,088, Cl. 264-109.000.
Prengaman, Raymond D., to RSR Corporation. Low antimony alloy. 4,376,093, Cl. 420-573.000.
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Dassler, Armin A., 4,375,728, Cl. 36-32.00R.
Pywell, Richard F., to British Petroleum Company Limited, The. Monitoring internal combustion engines. 4,375,761, Cl. 73-7.000.
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Bogner, Ben R.; and Grant-Acquah, Francis C., 4,376,089, Cl. 264-109.000.
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Vietti, David E., 4,376,208, Cl. 549-478.000.
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Byrne, Robert E.; Cancio, Leopoldo V.; Raffel, Arthur J.; and Wu, Pai-Chuan, 4,376,147, Cl. 428-167.000.
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Raul, Victor A.: *See*—
Daher, Lawrence J.; Hoss, George C.; and Raul, Victor A., 4,376,118, Cl. 424-227.000.
Raychem Corporation: *See*—
Maul, Frederick E.; and Goett, Edward P., 4,376,229, Cl. 174-35.00R.
RCA Corporation: *See*—
Andrus, James E.; and Hang, Kenneth W., 4,376,031, Cl. 204-299.0EC.
Butterwick, Gilbert N., 4,376,246, Cl. 250-207.000.
Glock, Thomas L., 4,376,258, Cl. 313-422.000.
Hedel, Rudolph H., 4,375,854, Cl. 209-643.000.
Kunz, Peter J., 4,376,009, Cl. 156-640.000.
Lurie, Michael J., 4,376,303, Cl. 369-45.000.
Poliniak, Eugene S.; and Datta, Pabitra, 4,376,087, Cl. 264-107.000.
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Sechi, Franco N., 4,376,287, Cl. 357-80.000.
Shanley, Robert L., II; and Parker, Robert P., 4,376,288, Cl. 358-39.000.
Shisler, Robert W.; and Barkow, William H., 4,376,273, Cl. 335-213.000.
Stevens, Barry N.; and Aldridge, Lester R., 4,375,992, Cl. 134-25.400.
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Reichhold Chemicals, Incorporated: *See*—
Wetzel, William H.; Pan, Hsi-Lung; Goodwin, Robert J.; and Wilkinson, John E., 4,376,220, Cl. 568-776.000.
Reid, Walter L., Jr.: *See*—
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Reitmeier, Glenn A.; and Marlowe, Frank J., to RCA Corporation. Self-enabling dropout corrector. 4,376,289, Cl. 358-163.000.
Renishaw Electrical Ltd.: *See*—
McMurtry, David R., 4,375,723, Cl. 33-174.00L.
Renn, Charles F.; and Koeller, William J., to General Motors Corporation. Arc detector for electric rod furnace. 4,376,243, Cl. 219-514.000.
Republic Steel Corporation: *See*—
Buff, Grier E.; and Phillips, Talmadge V., 4,376,242, Cl. 219-97.000.
Research Corporation: *See*—
Coward, James K.; and Tang, Kuo-Chang, 4,376,116, Cl. 424-180.000.
Jennings, Thomas J.; and Lipton, Allan, 4,376,071, Cl. 260-112.00R.
Rhoads, James D., to Dorma Door Controls Inc. Air lock door control apparatus. 4,375,735, Cl. 49-68.000.
Richardson, Paul N., to Du Pont de Nemours, E. I., and Company. Toughened polyamide flame retarded with octabromodiphenyl ether. 4,376,182, Cl. 524-371.000.
Richardson, Ryden L., to Union Oil Company of California. Hydrotreating process. 4,376,041, Cl. 208-215.000.
Richardson, Walter L., to Northern Telecom Limited. Cradle for a twisting machine. 4,375,875, Cl. 242-156.200.
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Ricoh Company, Ltd.: *See*—
Takahashi, Akira; and Koshiishi, Shinichiro, 4,375,912, Cl. 354-33.000.
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Briner, Emil; Novak, Peter; and Gasser, Hermann, 4,375,744, Cl. 57-96.000.
Rieth, Kurt A.: *See*—
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Rincon Industries, Inc.: *See*—
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Ripley, Richard E.: *See*—
Bert, Stephen F.; Ripley, Richard E.; and Rieth, Kurt A., 4,375,713, Cl. 24-206.00R.
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von Borries, Horst; and Rittel, Hans-Gerd, 4,375,824, Cl. 137-614.170.
Rivest, Ronald L., to Pitney Bowes, Inc. Data center for remote postage meter recharging system having physically secure encrypting apparatus and employing encrypted seed number signals. 4,376,299, Cl. 364-900.000.
RMR Systems Inc.: *See*—
Manning, John J.; Richart, Ralph M.; and Rosin, Robert E., 4,375,839, Cl. 177-137.000.
Robert Bosch GmbH: *See*—
Friedrich, Richard, 4,375,747, Cl. 60-433.000.
Heitmann, Jurgen, 4,376,291, Cl. 358-320.000.
Roberts, Derek A.; and Treby, John M., to Rolls-Royce Limited. System for supporting a rotor in a conditions of accidental dynamic imbalance. 4,375,906, Cl. 308-178.000.
Roberts, F. Alex, to Chevron Research Company. Seismic streamer locator. 4,376,301, Cl. 367-19.000.
Robertson, Roger L.: *See*—
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Rockland, Ronald H.: *See*—
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Rockwell International Corporation: *See*—
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Gergis, Isoris S.; and Lee, Wai-Tak P., 4,376,137, Cl. 427-131.000.
Rodewald, Paul G.: *See*—
Garwood, William E.; Rodewald, Paul G.; and Chen, Nai Y., 4,376,036, Cl. 208-111.000.
Rohrig, Adalbert, to Concast AG. Method and apparatus for supporting a steel strand produced during a continuous strand casting method. 4,375,830, Cl. 164-468.000.
Rolls-Royce Limited: *See*—
McMurtry, David R., 4,375,723, Cl. 33-174.00L.
Pask, George, 4,375,891, Cl. 277-3.000.
Roberts, Derek A.; and Treby, John M., 4,375,906, Cl. 308-178.000.
Romanauskas, William A., to Du Pont de Nemours, E. I., and Company. Rotating seal for centrifuges. 4,375,871, Cl. 494-41.000.
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Rosenfeld, Daniel D.; and Vaughan, David E. W., to Exxon Research & Engineering Co. Process for the separation of ortho aromatic isomers by selective adsorption. 4,376,226, Cl. 585-828.000.

Rosenthal, Joel W.: *See*—
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Rosin, Robert E.: *See*—
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Ross, Francis J.: *See*—
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Rossi, Albert; Rehrer, David H.; Oswald, Alexis A.; Lewtas, Kenneth; and Tack, Robert D., to Exxon Research & Engineering Co. Additive combinations and fuels containing them. 4,375,973, Cl. 44-62.000.
Rothwell, Harold L., Jr.; and White, Robert S., Jr., to GTE Products Corporation. High intensity discharge lamp including arc extinguishing means. 4,376,259, Cl. 315-074.000.
Roussel Uclaf: *See*—
Suglia, Jean-Claude; and Meinard, Colette, 4,376,113, Cl. 424-34.000.
Roussell Uclaf: *See*—
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Rozzi, Tullio E.; and Van Heuven, Johannes H. C., to U.S. Philips Corporation. Semiconductor laser or intensifier. 4,376,307, Cl. 372-45.000.
RSR Corporation: *See*—
Prengaman, Raymond D., 4,376,093, Cl. 420-573.000.
Russell, John P., to RCA Corporation. System for compensating for intensity variations and beam landing errors in flat panel display devices. 4,376,260, Cl. 315-366.000.
Ryan, Bruce A. Reloader. 4,375,778, Cl. 86-36.000.
Ryan, Thomas J.: *See*—
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Sabbota, Howard I.; and Weintraub, Marvin H., to Future Teck. Surgical ventilating apparatus. 4,375,811, Cl. 604-97.000.
Sabia, Raffaele A.; and Williams, James L., to Bell Telephone Laboratories, Incorporated. Communication cable sealed with a re-enterable sealing tape. 4,376,231, Cl. 174-92.000.
Sachs, Samuel L.; and Hill, Freeman K., to Johns Hopkins University, The. Ultrasonic cleaning method and apparatus. 4,375,991, Cl. 134-1.000.
Sader, Gabriel. Process for treating and regenerating used oil products. 4,376,040, Cl. 208-180.000.
Sage Products, Inc.: *See*—
Hanifl, Paul H., 4,375,849, Cl. 206-366.000.
Saiger, Gunther: *See*—
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Sakata, Gojyo: *See*—
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Salooja, Kailash C., to Exxon Research and Engineering Co. Method of at least partially burning a hydrocarbon and/or carbonaceous fuel. 4,375,949, Cl. 431-7.000.
Sandbach, David R.: *See*—
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Sanders, Carlos L.; Gebhardt, James L.; and Hutchins, Ferris L., to Mead Corporation, The. Reflective information display device. 4,375,730, Cl. 40-518.000.
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Sartori, Guido; Kim, Chang J.; Melchior, Michael T.; and Savage, David W., to Exxon Research and Engineering Co. Process for removing acid gases using a basic salt activated with a non-sterically hindered diamine. 4,376,101, Cl. 423-223.000.
Sartori, Guido: *See*—
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Sasaki, Nobuo: *See*—
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Satow, Jun: *See*—
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Sattlegger, Hans: *See*—
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Savage, David W.: *See*—
Sartori, Guido; Kim, Chang J.; Melchior, Michael T.; and Savage, David W., 4,376,101, Cl. 423-223.000.
Savage, Donald S.; and Lacey, Raymond D., to Aerpat A.G. Anvil for riveting tool. 4,375,760, Cl. 72-391.000.
Schaefer, Roland, to Kulzer & Co. GmbH. Dental composition containing X-ray opaque material. 4,375,967, Cl. 433-199.000.
Schelp, Rainer H., to Garrett Corporation, The. Air blast fuel nozzle system. 4,375,745, Cl. 60-39.290.
Schieber, Gerhard, to Karl Schmidt GmbH. Composite piston for internal combustion engines. 4,375,782, Cl. 92-176.000.
Schinzel, Erich: *See*—
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Schmitt, Frederick L.: *See*—
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Schnall, Ira H.: *See*—
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Schneider, Franklin R.: *See*—
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Schnell, Russell C.: *See*—
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Schoch, Daniel A.; and Wissman, Terry L., to Minster Machine Company, The. Method and apparatus for achieving thermal stability in a press. 4,375,785, Cl. 100-35.000.
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Schoenfeld, Charles G.: *See*—
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Scholle Corporation: *See*—
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Scholz, John A.: *See*—
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Schreiber, Lloyd J., Jr. In-line flow control apparatus. 4,375,882, Cl. 251-266.000.
Schrock, Andrew J. Draft control for stoves and furnaces. 4,375,872, Cl. 236-16.000.
Schubert, Peter; Pfeifer, Hermann; Hermann, Volker; Keller, Reimund; and Schulz, Eckhard, to SICOWA Verfahrenstechnik fur Baustoffe GmbH. Process for the production of calcium silicate-containing stone blanks useful in constructing building walls. 4,376,086, Cl. 264-42.000.
Schuette, William L.: *See*—
Gladrow, Elroy M.; Winter, William E.; and Schuette, William L., 4,376,039, Cl. 208-120.000.
Schultz, William J.; Etter, Margaret C.; Pocius, Alphonsus V.; and Smith, Samuel, to Minnesota Mining and Manufacturing Company. Cation complexes between cation guests and polymer hosts that contain cyclic ether units. 4,376,190, Cl. 525-333.100.
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Schubert, Peter; Pfeifer, Hermann; Hermann, Volker; Keller, Reimund; and Schulz, Eckhard, 4,376,086, Cl. 264-42.000.
Schupp, Thomas; Traxler, Peter; and Nuesch, Jakob, to Ciba-Geigy Corporation. Nocardia strain. 4,376,166, Cl. 435-253.000.
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Sechi, Franco N., to RCA Corporation. Microwave power circuit with an active device mounted on a heat dissipating substrate. 4,376,287, Cl. 357-80.000.
Seilly , Alec H.; and Laity, Thomas, to Lucas Industries Limited. Actuator mechanism. 4,375,793, Cl. 123-90.110.
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Morander, Karl-Erik, 4,375,921, Cl. 356-381.000.
Senga, Takao: *See*—
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Shah, Hemant D.; and Edzenga, Laurence, to American Cyanamid Company. Child resistant closure device. 4,375,858, Cl. 215-217.000.
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Sherk, Fred T.; and Edmonds, James T., Jr., to Phillips Petroleum Company. Arylene sulfide polymer purification. 4,376,196, Cl. 528-481.000.
Shibukawa, Kozo: *See*—
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Shigihara, Shigeyuki; and Tadokoro, Masahiro, to Shinko Electric Co., Ltd. Reverberatory furnace. 4,375,885, Cl. 266-214.000.
Shigihara, Takanori: *See*—
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Shimadzu Corporation: *See*—
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Itoh, Kunio; Oshima, Toshimichi; and Uesugi, Nobuyuki, 4,376,184, Cl. 524-492.000.
Takago, Toshio; Arai, Masatoshi; Inoue, Takeo; and Terashima, Masami, 4,376,192, Cl. 528-33.000.
Tawara, Yoshio; Chino, Tetsuichi; and Ohashi, Ken, 4,375,996, Cl. 148-31.570.
Shinko Electric Co., Ltd.: *See*—
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Shinn, John H.: *See*—
Dahlberg, Arthur J.; Shinn, John H.; Rosenthal, Joel W.; and Chu, Tim T., 4,376,037, Cl. 208-111.000.
Shipley, Randall S.; and Vance, Fred L., Jr., to Dow Chemical Company, The. Organo zirconium-chromium compound, catalyst prepared therefrom and polymerization of olefins therewith. 4,376,065, Cl. 252-429.00B.
Shirota, Norihisa, to Sony Corporation. Color video information processing apparatus. 4,376,290, Cl. 358-314.000.
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Shubkin, Ronald L.; and Baylerian, Marguerite S., to Ethyl Corporation. Chemical process. 4,376,222, Cl. 585-255.000.
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Schubert, Peter; Pfeifer, Hermann; Hermann, Volker; Keller, Reimund; and Schulz, Eckhard, 4,376,086, Cl. 264-42.000.
Sidebottom, Donald L.: *See*—
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Siemens Aktiengesellschaft: *See*—
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Martin, Erwin, 4,376,232, Cl. 179-110.00A.
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Siemens-Allis, Inc.: *See*—
Gallatin, Paul M.; and Robertson, Roger L., 4,376,271, Cl. 335-159.000.
Sigel, George H., Jr.: *See*—
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Signetics Corporation: *See*—
Anderson, Jared A.; Van Gelder, Robert V.; Yazolino, Lauren F.; and Braun, Jimmy E., 4,376,297, Cl. 364-200.000.
Sillion, Bernard: *See*—
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Silver Engineering Works, Inc.: *See*—
Price, Frank B.; and Vertenstein, Mathieu J., 4,375,990, Cl. 127-19.000.
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Godfraind, Theophile; Ghirardi, Paolo; Ferrari, Giorgio; and Casagrande, Cesare, 4,376,117, Cl. 424-211.000.
Simmons, Jesse K. Portable ice table. 4,375,758, Cl. 62-457.000.
Simpson, Harold G.; and Wilson, Robert S., to Wickes Corporation, The. Stacked panel package and methods for making same. 4,375,848, Cl. 206-321.000.
Sinclair, Robert L., to General Display, Inc. Support device and display assembly. 4,375,880, Cl. 248-225.100.
Siskind, David A., to Ecodyne Corporation. Liquid treatment apparatus. 4,376,045, Cl. 210-134.000.
Skinner, Mitchell A.: *See*—
Fenderson, Gerald L.; and Skinner, Mitchell A., 4,376,309, Cl. 375-101.000.
Slotar, Allan H.; and Cramer, Peter B. Mailing device. 4,375,868, Cl. 229-92.300.
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Smith, Kenneth L. Cleaning system for continuous yarn heat set machine. 4,375,957, Cl. 432-2.000.
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Tovey, Geoffrey D., 4,376,111, Cl. 424-15.000.
Smith, Peter W., to United Technologies Corporation. Multimode array antenna. 4,376,281, Cl. 343-768.000.
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Schultz, William J.; Etter, Margaret C.; Pocius, Alphonsus V.; and Smith, Samuel, 4,376,190, Cl. 525-333.100.
SMS Schloemann-Siemag Aktiengesellschaft: *See*—
Bohnenkamp, Heinrich, 4,375,998, Cl. 148-157.000.
Grotepass, Johann, 4,375,884, Cl. 266-115.000.
Smyth, William A.; Carlson, Graydon S.; and Wilde, Harold J., to Certron Corporation. System for display and storage of cassettes. 4,375,850, Cl. 206-387.000.
Societe Anonyme dite: Compagnie Europeenne Pour L'Equipement Menager "Cepem": *See*—
Gernez, Alain, 4,376,136, Cl. 427-33.000.
Societe Anonyme dite: Compagnie Generale d'Automatisme: *See*—
Chappot, Alain, 4,375,856, Cl. 209-706.000.
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Jacquet, Bernard; Papantonios, Christos; Vanlerberghe, Guy; and Mondet, Jean, 4,376,114, Cl. 424-47.000.
Societe Elf France: *See*—
Maldonado, Paul; Cohen, Choua; and Sillion, Bernard, 4,375,974, Cl. 44-63.000.
Sokol, David G.; Whitaker, Roger B.; Lord, John J.; and Beams, David M., to Dickey-john Corporation. Combine data center. 4,376,298, Cl. 364-551.000.
Sony Corporation: *See*—
Kamon, Yoshiyuki; and Yokoyama, Yoshihiro, 4,376,233, Cl. 179-115.5VC.
Moriya, Ryusuke; and Fujimori, Yasuhiro, 4,376,268, Cl. 331-10.000.
Shirota, Norihisa, 4,376,290, Cl. 358-314.000.
Sorenson, Marius W.: *See*—
Ezzell, Bobby R.; Burney, Harry S., Jr.; and Sorenson, Marius W., 4,376,030, Cl. 204-296.000.
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Long, Donald A.; and Sowash, Thomas R., 4,376,236, Cl. 200-61.270.
Spars, Byron G., to Chevron Research Company. Process for removing arsenic from green coke derived from shale oil. 4,376,015, Cl. 201-17.000.
Spear, Joseph F., Jr.: *See*—
Engle, William R.; Moore, E. Neil, Jr.; Spear, Joseph F., Jr.; and Rockland, Ronald H., 4,375,817, Cl. 128-419.00D.
Spechler, Daniel S., to Keuffel & Esser Company. Color-proofing method. 4,376,158, Cl. 430-291.000.
Spechler, Daniel S., to Keuffel & Esser Company. Method of preparing matte finish color-proofing surprints. 4,376,159, Cl. 430-293.000.
Spencer Products Company: *See*—
Nishman, Paul J., 4,375,806, Cl. 126-436.000.
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Vosper, Ralph R.; Spoormaker, Arie W.; Binasik, Chester S.; and Harthun, Norman E., 4,375,952, Cl. 431-171.000.
Springer, Carl M., to Binks Manufacturing Company. Color change system for spray coating apparatus. 4,375,865, Cl. 222-135.000.
Stabatrol Corp.: *See*—
Valiga, Richard E., 4,375,930, Cl. 405-128.000.
Stackhouse, Bill L.; and Taylor, Theodore E., to General Electric Company. Mobile data terminal channel busy arrangement. 4,376,310, Cl. 375-104.000.
Stadler, James F., to Exxon Research and Engineering Co. Process for preparing lithium soap greases containing borate salt with high dropping point. 4,376,060, Cl. 252-42.100.
Staffen, Martin, to Siemens Aktiengesellschaft. Circuit breaker. 4,376,270, Cl. 335-21.000.
Standard Oil Company (Indiana): *See*—
Bertolacini, Ralph J.; Hirschberg, Eugene H.; and Modica, Frank S., 4,376,103, Cl. 423-244.000.
Guillaud, Maurice; and Bissery, Paul H., 4,375,985, Cl. 106-84.000.
Hoff, Glen R.; and Fotis, Peter, 4,376,064, Cl. 252-429.00B.
Stanistreet, Keith C. P.: *See*—
Izzard, Keith J.; Stephenson, Reginald W.; Stanistreet, Keith C. P.; and Keeling, Iain R., 4,376,218, Cl. 568-559.000.
Stankovics, Lajos: *See*—
Piukovich, Sandor; Stankovics, Lajos; and Kiralyhidi, Tibor, 4,376,129, Cl. 426-64.000.
Stanley Interiors Corporation: *See*—
Maddox, David P., 4,376,141, Cl. 427-370.000.
Steel, Margaret L.: *See*—
Cowen, Geoffrey; Norton-Berry, Philip; and Steel, Margaret L., 4,376,084, Cl. 264-8.000.
Stefanovic, Victor R.: *See*—
Bhagwat, Pradeep M.; and Stefanovic, Victor R., 4,376,296, Cl. 363-138.000.
Stephens, Donald L., to PaccarInc. Air deflector assembly. 4,375,898, Cl. 296-1.00S.
Stephenson, Reginald W.: *See*—
Izzard, Keith J.; Stephenson, Reginald W.; Stanistreet, Keith C. P.; and Keeling, Iain R., 4,376,218, Cl. 568-559.000.
Sterioff, Michael C.: *See*—
Hellnick, Dieter H.; and Sterioff, Michael C., 4,375,708, Cl. 10-87.000.
Sterling Drug Inc.: *See*—
Munzenmaier, Wolfgang; Eggensperger, Heinz; Ehlers, Helmut H.; Beilfuss, Wolfgang; Bucklers, Lothar; and Harke, Hans-Peter, 4,376,094, Cl. 422-36.000.
Stevens, Barry N.; and Aldridge, Lester R., to RCA Corporation. Apparatus and method for cleaning recorded discs. 4,375,992, Cl. 134-25.400.
Stewart, David G.: *See*—
Ball, William J.; and Stewart, David G., 4,376,104, Cl. 423-329.000.
Stewart, William L., to Boeing Company, The. Overhead sliding door and foldable cabin panel assembly for an airplane. 4,375,876, Cl. 244-129.500.
Stift, Kurt: *See*—
Sulzbacher, Horst; Saiger, Gunther; and Stift, Kurt, 4,376,139, Cl. 427-214.000.
Stinson, John M.: *See*—
Jones, Thomas M.; and Stinson, John M., 4,375,980, Cl. 71-34.000.

Stocking, George E.; Noland, Joseph R.; and Sidebottom, Donald L., to General Electric Company. Air conditioning apparatus. 4,375,752, Cl. 62-150.000.
Stohlquist, Roger H.; and Brown, Jonathan G., to Anderson Bros. Mfg. Co. Container filling machine. 4,375,826, Cl. 141-137.000.
Stoll, William A.: *See*—
Amadill, Mark F.; Allmendinger, James M.; and Lender, Harry, 4,375,757, Cl. 62-354.000.
Stone, Kirby L.: *See*—
Belangee, Gilbert R.; Dransman, Robert J.; and Stone, Kirby L., 4,376,172, Cl. 521-133.000.
Stone, Richard W.: *See*—
Franzen, Raymond E.; Goad, Eugine W.; and Stone, Richard W., 4,375,711, Cl. 16-252.000.
Stotzer, Hermann: *See*—
Bey, Ulf; Lassig, Martin; and Stotzer, Hermann, 4,375,726, Cl. 33-324.000.
Strombecker Corporation: *See*—
Muys, Louis G., 4,375,886, Cl. 272-75.000.
Stuart, Clifford H. Embankment pump. 4,375,943, Cl. 417-231.000.
Stuart, Gerald W., to Desoutter Limited. Power tool. 4,376,240, Cl. 200-322.000.
Studiecentrum voor Kernenergie, S.C.K.: *See*—
Bruggeman, Aime E.; Leysen, Roger F. R.; Vermeiren, Philippe; and Monsecour, Marcel, 4,376,066, Cl. 252-430.000.
Sturans, Maris A.: *See*—
Pfeiffer, Hans C.; Langner, Guenther O.; and Sturans, Maris A., 4,376,249, Cl. 250-396.0ML.
Suenobu, Koreyoshi; Hidaka, Yasuhiro; and Ike, Tetsuji, to Yoshitomi Pharmaceutical Industries Ltd. Stabilized antifouling paint composition. 4,376,181, Cl. 524-343.000.
Sugino, Kazuo; Kageyama, Hideaki; and Masumoto, Hiroki, to Nippon Steel Corporation. Method for manufacturing high strength rail of excellent weldability. 4,375,995, Cl. 148-12.00R.
Suglia, Jean-Claude; and Meinard, Colette, to Roussel Uclaf. Stable suspensions and powders of stable microcapsules and their preparation. 4,376,113, Cl. 424-34.000.
Sulewski, Frank P., Jr.: *See*—
Murphy, Joseph M.; and Sulewski, Frank P., Jr., 4,375,970, Cl. 493-337.000.
Sullivan, Kevin J., to Corning Glass Works. Apparatus for and method of assuring the quality of the results obtained from a blood gas analyzer. 4,375,743, Cl. 53-434.000.
Sulzbacher, Horst; Saiger, Gunther; and Stift, Kurt, to Voest-Alpine Aktiengesellschaft. Process for treating metallic starting materials for smelting plants, particularly iron sponge particles. 4,376,139, Cl. 427-214.000.
Sumitomo Chemical Company, Limited: *See*—
Nohira, Hiroyuki; Terunuma, Daiyo; and Koube, Shinji, 4,376,213, Cl. 562-401.000.
Supraton F. J. Zucker GmbH: *See*—
Zucker, Friedrich J.; Osthaus, Georg; Hanig, Gernot; and Culemeyer, Karl, 4,376,079, Cl. 260-413.000.
Surgikos, Inc.: *See*—
Wadsworth, Larry C.; and Hersh, Solomon P., 4,375,718, Cl. 29-592.00E.
Suster, Mary E.: *See*—
Collins, Edward J.; and Suster, Mary E., 4,375,955, Cl. 431-359.000.
Sutton, David A.: *See*—
Meier, Markus; and Sutton, David A., 4,376,294, Cl. 360-105.000.
Suwaki, Toshitaka; and Ando, Otaro, to Olympus Optical Company Ltd. Ultrasonic diagnosis system assembled into endoscope. 4,375,818, Cl. 128-660.000.
Suzuki, Hirokazu: *See*—
Nawata, Kazumasa; and Suzuki, Hirokazu, 4,375,999, Cl. 148-187.000.
Swanson, Clifford S. Fuel vaporization system. 4,375,799, Cl. 123-549.000.
Swift, Harold E.; and Lunden, Richard W., to Gulf Research & Development Company. Polymerizing olefins with a novel catalyst. 4,376,061, Cl. 252-429.00B.
SWS Silicones Corporation: *See*—
Martin, Eugene R., 4,376,149, Cl. 428-266.000.
Sybron Corporation: *See*—
Freeman, Frank H., 4,375,966, Cl. 433-37.000.
Syntex (U.S.A.) Inc.: *See*—
Knopp, Arthur A.; and Kelly, Leonard J., 4,375,964, Cl. 433-29.000.
Szanto, Attila J.: *See*—
Levy, Alan W.; Szanto, Attila J.; and Wheeler, Peter C., 4,376,253, Cl. 307-590.000.
Szasz, Tibor; and Liedl, Kurt, to TMC Corporation. Ski brake. 4,375,895, Cl. 280-605.000.
Tachibana, Akifumi; Watanabe, Minoru; and Shigihara, Takanori, to Kabushiki Kaisha Morita Seisakusho. Control system of and device for memorizing, reading and reproducing the position of material to be controlled. 4,375,900, Cl. 297-330.000.
Tack, Robert D.: *See*—
Rossi, Albert; Rehrer, David H.; Oswald, Alexis A.; Lewtas, Kenneth; and Tack, Robert D., 4,375,973, Cl. 44-62.000.
Tada, Mitsuo: *See*—
Hiraike, Shizuka; Yoshida, Yukihiro; Hashimoto, Shintaro; Tada, Mitsuo; and Yamagishi, Toshio, 4,375,917, Cl. 355-14.00R.
Tadokoro, Masahiro: *See*—
Shigihara, Shigeyuki; and Tadokoro, Masahiro, 4,375,885, Cl. 266-214.000.
Tai, Harold Y.; and Norris, Floyd E., to Royal Dental Manufacturing, Inc. Locking headrest for dental chair. 4,375,902, Cl. 297-406.000.
Takada, Juichiro. Coupling for joining a drive wire to a belt transfer member. 4,375,897, Cl. 280-804.000.
Takagi, Tsuneo: *See*—
Isono, Koichi; and Takagi, Tsuneo, 4,375,918, Cl. 355-35.000.
Takago, Toshio; Arai, Masatoshi; Inoue, Takeo; and Terashima, Masami, to Shin-Etsu Chemical Co., Ltd. Room temperature-curable organopolysiloxane compositions. 4,376,192, Cl. 528-33.000.
Takahashi, Akira; and Koshiishi, Shinichiro, to Ricoh Company, Ltd. Electric circuits for use in camera. 4,375,912, Cl. 354-33.000.
Takahashi, Kengo: *See*—
Imasu, Kenichiro; Nakazawa, Akira; Yamane, Masataka; and Takahashi, Kengo, 4,375,753, Cl. 62-160.000.
Takamura, Tooru: *See*—
Itoh, Kunio; and Takamura, Tooru, 4,376,174, Cl. 523-456.000.
Takani, Akio; and Kondo, Kazuo, to NGK Spark Plugs Co., Ltd. Phosphate of calcium ceramics. 4,376,168, Cl. 501-1.000.
Takaya, Yoshikazu: *See*—
Tsubai, Yasuo; Takaya, Yoshikazu; and Senga, Takao, 4,376,157, Cl. 430-229.000.
Taki Chemical Co. Ltd.: *See*—
Okamoto, Jiro; Ishigaki, Isao; Fukuzaki, Hironobu; Shimbo, Shozo; and Yoshikawa, Kiyoaki, 4,376,021, Cl. 204-159.160.
Tamagni, Albert J.: *See*—
Newkirk, Mark C.; and Tamagni, Albert J., 4,375,979, Cl. 65-360.000.
Tanaka, Chiaki; Nakashima, Shinobu; and Naito, Nagayoshi, to Toray Industries, Inc. Polyester amide and process for producing the same. 4,376,194, Cl. 528-288.000.
Tanaka, Yoshiyuki: *See*—
Matuda, Hiroshi; Nishimura, Takamoto; Tanaka, Yoshiyuki; and Hatabu, Yoshihiko, 4,376,105, Cl. 423-400.000.
Tang, Kuo-Chang: *See*—
Coward, James K.; and Tang, Kuo-Chang, 4,376,116, Cl. 424-180.000.
Tateishi, Kazuyoshi: *See*—
Kotani, Shintaro; Abiko, Ichimatsu; Tokunaga, Yukio; and Tateishi, Kazuyoshi, 4,376,282, Cl. 346-107.00R.
Tawara, Yoshio; Chino, Tetsuichi; and Ohashi, Ken, to Shin-Etsu Chemical Co., Ltd. Rare earth metal-containing alloys for permanent magnets. 4,375,996, Cl. 148-31.570.
Taylor, Theodore E.: *See*—
Stackhouse, Bill L.; and Taylor, Theodore E., 4,376,310, Cl. 375-104.000.
TDC Technology Development Corporation: *See*—
Fawcett, William R.; and Baramki, Andrzej S., 4,376,016, Cl. 204-14.00N.
Teckchandani, Lall D., to United States Gypsum Company. Shower door having adjustable pivot members. 4,375,736, Cl. 49-388.000.
Tecumseh Products Company: *See*—
Wasmer, Anthony E., 4,375,794, Cl. 123-149.00C.
Wolf, Rudolf H., 4,375,944, Cl. 417-368.000.
Tennessee Valley Authority: *See*—
Jones, Thomas M.; and Stinson, John M., 4,375,980, Cl. 71-34.000.
Teramura, Nobuyasu; and Kobayashi, Hiroshi, to Matsushita Electric Industrial Co., Ltd. Magnetic disk recording and/or reproducing device. 4,376,293, Cl. 360-71.000.
Terasaki, Kaoru: *See*—
Uchida, Ryuichi; Terasaki, Kaoru; and Nishino, Takeo, 4,376,304, Cl. 369-136.000.
Terasaki, Wesley L.: *See*—
Brooker, Gary; Terasaki, Wesley L.; and Linden, Joel M., 4,376,125, Cl. 424-330.000.
Terashima, Masami: *See*—
Takago, Toshio; Arai, Masatoshi; Inoue, Takeo; and Terashima, Masami, 4,376,192, Cl. 528-33.000.
Terumo Corporation: *See*—
Hasegawa, Hiroshi, 4,376,095, Cl. 422-46.000.
Isono, Keinosuke, 4,376,051, Cl. 210-321.300.
Terunuma, Daiyo: *See*—
Nohira, Hiroyuki; Terunuma, Daiyo; and Koube, Shinji, 4,376,213, Cl. 562-401.000.
Teufel, Gerhard: *See*—
Menschhorn, Fridolin; Schonleitner, Ernst; Teufel, Gerhard; and Wertheimer, Paul, 4,376,011, Cl. 162-5.000.
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Feller, Ron; Nahir, David; and Coble, Charlie G., 4,375,853, Cl. 209-640.000.
Textron, Inc.: *See*—
Bert, Stephen F.; Ripley, Richard E.; and Rieth, Kurt A., 4,375,713, Cl. 24-206.00R.
Thaler, Warren A.; Sartori, Guido; and Kim, Chang J., to Exxon Research and Engineering Co. Process for removing acid gases using a basic salt activated with a diaminoalcohol. 4,376,102, Cl. 423-223.000.
Theodore, Ares N.; and Chattha, Mohinder S., to Ford Motor Company. High solids urethane coatings with enhanced flexibility and impact strength. 4,376,187, Cl. 525-123.000.
Thiokol Corporation: *See*—
Bertozzi, Eugene R., 4,376,193, Cl. 528-59.000.
Thomas, Dean L.: *See*—
Reese, Thomas J.; Jursa, Stephen J. D.; and Thomas, Dean L., 4,375,978, Cl. 65-287.000.
Thomas, Spencer. Tethered projectile game device. 4,375,890, Cl. 273-320.000.

Thomson-Csf: *See*—
Friederich, Alain; Hildebrandt, Mieczylaw; Kaplan, Daniel; and Herbet, Patrick, 4,375,807, Cl. 126-443.000.
Tonnel, Eugene, 4,375,717, Cl. 29-571.000.
TMC Corporation: *See*—
Szasz, Tibor; and Liedl, Kurt, 4,375,895, Cl. 280-605.000.
Tobin, Curtis L.: *See*—
Ciarlei, Joseph A.; Jennings, William B.; and Tobin, Curtis L., 4,375,804, Cl. 126-306.000.
Tokunaga, Yukio: *See*—
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Tominaga, Satoshi: *See*—
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Tonnel, Eugene, to Thomson-CSF. Process for producing a field-effect transistor. 4,375,717, Cl. 29-571.000.
Topfl, Rosemarie, to Ciba-Geigy Corporation. Reaction product salts of epoxides, polyalkylenepoly-aminoamides, fatty amines and fatty acids or fatty acid esters, halides, isocyanates or ketene dimers. 4,376,078, Cl. 260-404.500.
Toray Industries, Inc.: *See*—
Tanaka, Chiaki; Nakashima, Shinobu; and Naito, Nagayoshi, 4,376,194, Cl. 528-285.000.
Toshin Seiko Kabushiki Kaisha: *See*—
Date, Takasaburo; Maki, Toshimichi; Iguchi, Mitsuya; Iwamaru, Sumifusa; and Watanabe, Hisashi, 4,375,958, Cl. 432-9.000.
Tovey, Geoffrey D., to Smith Kline & French Laboratories Limited. Tilting units. 4,376,111, Cl. 424-15.000.
Toyo Soda Manufacturing Co., Ltd.: *See*—
Miyanohara, Isao; Hashimoto, Shinichi; and Miyazaki, Hiroshi, 4,376,106, Cl. 423-429.000.
Toyota Jidosha Kogyo Kabushiki Kaisha: *See*—
Hattori, Kyo, 4,375,746, Cl. 60-274.000.
Trans-Cryption, Inc.: *See*—
Perlman, Marvin; and Goldfine, Milton, 4,376,279, Cl. 235-380.000.
Traxler, Peter: *See*—
Schupp, Thomas; Traxler, Peter; and Nuesch, Jakob, 4,376,166, Cl. 435-253.000.
Treby, John M.: *See*—
Roberts, Derek A.; and Treby, John M., 4,375,906, Cl. 308-178.000.
Trendway Corporation: *See*—
Vander Kooi, David; and Flamboe, Donald, Jr., 4,375,907, Cl. 312-109.000.
Trenkle, Robert W.: *See*—
Mookherjee, Braja D.; Trenkle, Robert W.; Chant, Bernard J.; van Ouwerkerk, Anton; Kamath, Venkatesh; and Mussinan, Cynthia J., 4,376,068, Cl. 252-522.00R.
Trivette, Chester D., to Monsanto Company. Rubber compositions and method of treating rubber. 4,376,189, Cl. 525-291.000.
Trott, Donald E., to D & D Company Ltd. Casing perforation method and apparatus. 4,375,834, Cl. 166-297.000.
Trudel, Roger. Oil and gas combination nozzle. 4,375,954, Cl. 431-9.000.
Tsang, Siu K., to Intel Corporation. Memory system employing mostly good memories. 4,376,300, Cl. 365-200.000.
Tsubai, Yasuo; Takaya, Yoshikazu; and Senga, Takao, to Mitsubishi Paper Mills, Ltd. Photographic materials with two-dimensionally distributed precipitation nuclei. 4,376,157, Cl. 430-229.000.
Tsuboi, Hikotada: *See*—
Oba, Masayuki; Kawamata, Motoo; Tsuboi, Hikotada; and Koga, Nobuhito, 4,376,206, Cl. 548-546.000.
Tucker, Kenneth W.: *See*—
Joo', Louis A.; Tucker, Kenneth W.; and McCown, Frank E., 4,376,029, Cl. 204-294.000.
Tuji, Takuji: *See*—
Morita, Munetaka; Tuji, Takuji; and Ishida, Katsuhiko, 4,376,150, Cl. 428-320.400.
Turbett, Robert J.; Ashcraft, Arnold C.; and Petty, Herbert E., to Union Carbide Corporation. Ethylene polymers stabilized against water-treeing by N-phenyl substituted amino silanes; and the use of these compositions as insulation about electrical conductors. 4,376,180, Cl. 524-188.000.
Ube Industries, Ltd.: *See*—
Hamamoto, Toshikazu; and Harada, Katsumasa, 4,376,080, Cl. 260-465.80R.
Matuda, Hiroshi; Nishimura, Takamoto; Tanaka, Yoshiyuki; and Hatabu, Yoshihiko, 4,376,105, Cl. 423-400.000.
Uchida, Ryuichi; Terasaki, Kaoru; and Nishino, Takeo, to Nippon Atsudenki Kabushiki Kaisha. Moving coil type stereophonic pickup cartridge. 4,376,304, Cl. 369-136.000.
Uchidoi, Masanori; and Urushihara, Kazunobu, to Canon Kabushiki Kaisha. Shutter time control camera. 4,375,915, Cl. 354-234.000.
Uchidoi, Masanori: *See*—
Kiuchi, Masayoshi; Uchidoi, Masanori; and Murakami, Hiroyasu, 4,376,265, Cl. 324-426.000.
Ueda, Herbert T., to United States of America, Army. Collapsible restraint for measuring tapes. 4,375,721, Cl. 33-137.00R.
Uenosono, Chikasa; Okada, Takao; Matsuki, Junya; Naito, Tadashi; Inoue, Shinichiro; and Obata, Yoshizo, to Fuji Electric Co. Ltd.; and Yoshizo Obata. System for predicting desynchronization of a synchronous machine. 4,376,295, Cl. 361-21.000.
Uesugi, Nobuyuki: *See*—
Itoh, Kunio; Oshima, Toshimichi; and Uesugi, Nobuyuki, 4,376,184, Cl. 524-492.000.
Uhl, Jurgen: *See*—
Hausberg, Hans-Heinrich; Prucher, Helmut; Uhl, Jurgen; Seyfried, Christoph; and Minck, Klaus, 4,376,123, Cl. 424-283.000.
Ulsteen, Kare, to Dyno Industrier A.S. Process for the preparation of aluminum-containing high-energy explosive compositions. 4,376,083, Cl. 264-3.00D.
Union Carbide Corporation: *See*—
Geck, Reginald W., 4,376,191, Cl. 526-102.000.
Hamer, Anthony D.; and Karol, Frederick J., 4,376,062, Cl. 252-429.00B.
Turbett, Robert J.; Ashcraft, Arnold C.; and Petty, Herbert E., 4,376,180, Cl. 524-188.000.
Union Oil Company of California: *See*—
Richardson, Ryden L., 4,376,041, Cl. 208-215.000.
United States Gypsum Company: *See*—
Teckchandani, Lall D., 4,375,736, Cl. 49-388.000.
United States of America
Agriculture: *See*—
Frank, Arlen W., 4,376,211, Cl. 560-158.000.
Army: *See*—
Ueda, Herbert T., 4,375,721, Cl. 33-137.00R.
Navy: *See*—
Baldwin, Dorothy M., 4,375,908, Cl. 350-96.250.
Giallorenzi, Thomas G.; and Sigel, George H., Jr., 4,376,248, Cl. 250-227.000.
Miller, Harry B., 4,376,302, Cl. 367-157.000.
U.S. Philips Corporation: *See*—
Asselman, George A.; Castelijns, Adrianus P. J.; and Van Mensvoort, Adrianus J., 4,375,832, Cl. 165-152.000.
Forward, Bernard-Edouard, 4,376,269, Cl. 331-117.00R.
Mignolet, Georges M. A., 4,376,292, Cl. 360-66.000.
Rozzi, Tullio E.; and Van Heuven, Johannes H. C., 4,376,307, Cl. 372-45.000.
United Technologies Corporation: *See*—
Smith, Peter W., 4,376,281, Cl. 343-768.000.
University of California, Regents of the: *See*—
Bergman, Robert G.; Becker, Paul N.; and White, Mary A., 4,376,217, Cl. 564-448.000.
University of Virginia Alumni Patents Foundation: *See*—
Brooker, Gary; Terasaki, Wesley L.; and Linden, Joel M., 4,376,125, Cl. 424-330.000.
University Patents, Inc.: *See*—
Kozloff, Lloyd M.; and Schnell, Russell C., 4,375,734, Cl. 47-2.000.
UOP Inc.: *See*—
Vora, Bipin V., 4,376,225, Cl. 585-659.000.
Upjohn Company, The: *See*—
Prather, Richard A., 4,376,088, Cl. 264-109.000.
Ura, Yasukazu; Sakata, Gojyo; Makino, Kenji; Kawamura, Yasuo; Kusano, Kazuya; and Satow, Jun, to Nissan Chemical Industries, Ltd. Aniline derivative and process for production thereof. 4,376,202, Cl. 544-354.000.
Urion, Kendall D., to Western Electric Co., Inc. Methods of electrolytically treating portions of digitated strips and treating cell. 4,376,017, Cl. 204-15.000.
Urushihara, Kazunobu: *See*—
Uchidoi, Masanori; and Urushihara, Kazunobu, 4,375,915, Cl. 354-234.000.
Uskokovic, Milan R.; and Wovkulich, Peter M., to Hoffmann-La Roche Inc. Chiral synthesis of amino sugars. 4,376,207, Cl. 549-417.000.
Utracki, Lechoslaw A. M., to C-I-L Inc. Multi-ingredient gas generators. 4,376,002, Cl. 149-35.000.
Valentine, Philip J. Dynamic filter system. 4,376,049, Cl. 210-232.000.
Valiga, Richard E., to Stabatrol Corp. Permanent disposal vault for containers. 4,375,930, Cl. 405-128.000.
Vamco Machine & Tool, Inc.: *See*—
Gentile, Patrick J., 4,375,759, Cl. 72-131.000.
Vance, Fred L., Jr.: *See*—
Shipley, Randall S.; and Vance, Fred L., Jr., 4,376,065, Cl. 252-429.00B.
Vander Kooi, David; and Flamboe, Donald, Jr., to Trendway Corporation. Flipper door assembly. 4,375,907, Cl. 312-109.000.
van der Lely, Ary; and Bom, Cornelis J. G., to C. Van der Lely N.V. Soil cultivating machine with axially displaceable adjusting rod. 4,375,837, Cl. 172-68.000.
Van Gelder, Robert V.: *See*—
Anderson, Jared A.; Van Gelder, Robert V.; Yazolino, Lauren F.; and Braun, Jimmy E., 4,376,297, Cl. 364-200.000.
van Herk, Cornelis: *See*—
Brandenburg, Jan H.; and van Herk, Cornelis, 4,375,956, Cl. 432-76.000.
Van Heuven, Johannes H. C.: *See*—
Rozzi, Tullio E.; and Van Heuven, Johannes H. C., 4,376,307, Cl. 372-45.000.
Vanlerberghe, Guy: *See*—
Jacquet, Bernard; Papantoniou, Christos; Vanlerberghe, Guy; and Mondet, Jean, 4,376,114, Cl. 424-47.000.
Van Loveren, Augustinus G.: *See*—
Boden, Richard M.; Dekker, Lambert; Schmitt, Frederick L.; and Van Loveren, Augustinus G., 4,376,058, Cl. 252-174.110.
Van Mensvoort, Adrianus J.: *See*—
Asselman, George A.; Castelijns, Adrianus P. J.; and Van Mensvoort, Adrianus J., 4,375,832, Cl. 165-152.000.
van Ouwerkerk, Anton: *See*—
Mookherjee, Braja D.; Trenkle, Robert W.; Chant, Bernard J.; van Ouwerkerk, Anton; Kamath, Venkatesh; and Mussinan, Cynthia J., 4,376,068, Cl. 252-522.00R.

Van Zweeden, Adriaan: *See*—
Oosterling, Pieter A.; and Van Zweeden, Adriaan, 4,375,786, Cl. 100-189.000.
Vaseen, Dale A.: *See*—
Vaseen, Vesper A.; and Vaseen, Dale A., 4,375,812, Cl. 128-207.270.
Vaseen, Vesper A.; and Vaseen, Dale A. Burn treatment by patient immersion in an inert, isotonic liquid, which has had ozone absorbed therein. 4,375,812, Cl. 128-207.270.
Vaughan, David E. W.: *See*—
Rosenfeld, Daniel D.; and Vaughan, David E. W., 4,376,226, Cl. 585-828.000.
Venkatsubramanian, Kalyanasundram; Jain, Surendar M.; and Giuffrida, Anthony J., to Hubinger Company, The. Process for the preferential separation of dextrose from oligosaccharides. 4,376,023, Cl. 204-180.00P.
Vermeiren, Philippe: *See*—
Bruggeman, Aime E.; Leynen, Roger F. R.; Vermeiren, Philippe; and Monsecour, Marcel, 4,376,066, Cl. 252-430.000.
Vertenstein, Mathieu J.: *See*—
Price, Frank B.; and Vertenstein, Mathieu J., 4,375,990, Cl. 127-19.000.
Vielbig, Leslie W., to Fluid Kinetics Corporation. Fluid flow apparatus for accommodating a pressure drop. 4,375,841, Cl. 181-272.000.
Vietti, David E., to Quaker Oats Company, The. Hydroformylation of dihydrofuran. 4,376,208, Cl. 549-478.000.
Vinarcsik, Joseph E.; and Jachim, John A., to Hi-Hard Rolls, Inc. Roller for use in a conveyor-roller structure. 4,375,820, Cl. 134-122.00R.
Viramontes-Brown, Ricardo: *See*—
Celada, Juan; MacKay, Patrick W.; Price-Falcon, Juan F.; and Viramontes-Brown, Ricardo, 4,375,983, Cl. 75-35.000.
Vitellaro, Frank A., to Dayco Corporation. Method of making hose. 4,376,005, Cl. 156-195.000.
Vitobello, Vincenza; Branduzzi, Paolo; and Cimini, Nadia, to E.N.I. Ente Nazionale Idrocarburi. Hydrolysis of raffinose by alpha-galactoxidase. 4,376,167, Cl. 435-276.000.
VLSI Technology Research Association: *See*—
Nawata, Kazumasa; and Suzuki, Hirokazu, 4,375,999, Cl. 148-187.000.
Voest-Alpine Aktiengesellschaft: *See*—
Sulzbacher, Horst; Saiger, Gunther; and Stift, Kurt, 4,376,139, Cl. 427-214.000.
Vogel, Roger F.; and Marcelin, George, to Gulf Research & Development Company. Catalytic supports with controlled pore properties. 4,376,067, Cl. 252-437.000.
Volpe, Luke R., to Dynamics Research Corporation. Encoder disc and method of manufacture. 4,376,161, Cl. 430-321.000.
von Borries, Horst; and Rittel, Hans-Gerd, to Feldmuhle Aktiengesellschaft. Valve assembly with silencer. 4,375,824, Cl. 137-614.170.
von der Heide, Johann; Muller, Rolf; and Doemen, Benno, to Papst-Motoren KG. Two-pulse brushless d.c. motor. 4,376,261, Cl. 318-254.000.
von Holdt, John W. Plastic bucket defining annular inwardly projecting ridge and method. 4,375,948, Cl. 425-437.000.
Vora, Bipin V., to UOP Inc. Dehydrogenation process utilizing indirect heat exchange and direct combustion heating. 4,376,225, Cl. 585-659.000.
Vosper, Ralph R.; Spoormaker, Arie W.; Binasik, Chester S.; and Harthun, Norman E., to Coen Company, Inc. Wall fired duct heater. 4,375,952, Cl. 431-171.000.
W. H. Brady Co.: *See*—
Frame, Norman J., 4,376,145, Cl. 428-195.000.
W. R. Grace & Co.: *See*—
Lange, Bruce A.; and Duecker, Heyman C., 4,375,987, Cl. 106-95.000.
Waast, Emile. Device for combatting rodents. 4,375,732, Cl. 43-131.000.
Wadsworth, Larry C.; and Hersh, Solomon P., to Surgikos, Inc. Method of making fibrous electrets. 4,375,718, Cl. 29-592.00E.
Wald, Roland: *See*—
Schoenauer, Wolfgang; and Wald, Roland, 4,376,077, Cl. 260-373.000.
Wall, Edward T. Method and apparatus for recovering carbon products from oil shale. 4,376,034, Cl. 208-11.00R.
Wallasvaara, Jorma. Stove. 4,375,802, Cl. 126-21.00A.
Wallenfels, Kurt, to Behringwerke Aktiengesellschaft. Indoxylmaltodextrins, a process for their preparation and their use. 4,376,197, Cl. 536-17.400.
Walser, Armin; and Fryer, Rodney I., to Hoffmann-La Roche Inc. Imidazodiazepines and processes therefor. 4,376,074, Cl. 260-244.400.
Walser, Armin; and Fryer, Rodney I., to Hoffmann-La Roche Inc. Process for producing imidazodiazepines. 4,376,075, Cl. 260-244.400.
Walsh, William R.: *See*—
Armstrong, Joseph; Gordon, Robert L.; Walsh, William R.; and King, Sr., Jack H., 4,375,716, Cl. 29-404.000.
Wang, Pao-Chi, to Lindsay Wire Weaving Company, The. Process for removal of pitch-containing water and method of coating belts for paper machine. 4,376,013, Cl. 162-274.000.
Warax, Earnest R. Remote storage spittoon. 4,375,705, Cl. 4-271.000.
Wasmer, Anthony E., to Tecumseh Products Company. External inductive solid state ignition system. 4,375,794, Cl. 123-149.00C.
Watanabe, Fumio; Mitsuhata, Masashi; and Kumazawa, Toshihiko, to Nippon Shokubai Kagaku Kogyo Co., Ltd. Process for production of ethylene oxide. 4,376,209, Cl. 549-534.000.
Watanabe, Hisashi: *See*—
Date, Takasaburo; Maki, Toshimichi; Iguchi, Mitsuya; Iwamaru, Sumifusa; and Watanabe, Hisashi, 4,375,958, Cl. 432-9.000.
Watanabe, Minoru: *See*—
Tachibana, Akifumi; Watanabe, Minoru; and Shigihara, Takanori, 4,375,900, Cl. 297-330.000.
Webb, William D.: *See*—
Giersch, Robert V.; Hoeppner, Douglas K.; and Webb, William D., 4,375,866, Cl. 227-19.000.
Weber, Helmut: *See*—
Bader, Leonhard; Giessner, Frank; and Weber, Helmut, 4,376,284, Cl. 346-140.00R.
Weber, Richard D. Solar roof, eaves and gutter device. 4,375,805, Cl. 126-417.000.
Weeks, Paul D., to Pfizer Inc. 3-Hydroxy 2-methyl benzisothiazolines as intermediates in production of piroxicam. 4,376,204, Cl. 548-210.000.
Weichel, Ernst. Apparatus for loosening soil. 4,375,836, Cl. 172-40.000.
Weigel, Horst: *See*—
Deller, Klaus; Kleemann, Axel; Martens, Jurgen; and Weigel, Horst, 4,376,215, Cl. 564-198.000.
Weightman, Barry O.: *See*—
Evans, David M.; and Weightman, Barry O., 4,375,703, Cl. 3-1.910.
Weintraub, Marvin H.: *See*—
Sabbota, Howard I.; and Weintraub, Marvin H., 4,375,811, Cl. 604-97.000.
Weissman, Bernard, to IPCO Corporation. Dental impression tray assembly. 4,375,965, Cl. 433-37.000.
Wertheimer, Paul: *See*—
Menschhorn, Fridolin; Schonleitner, Ernst; Teufel, Gerhard; and Wertheimer, Paul, 4,376,011, Cl. 162-5.000.
Western Electric Company, Inc.: *See*—
Kent, William C., 4,375,719, Cl. 29-747.000.
Urion, Kendall D., 4,376,017, Cl. 204-15.000.
Westinghouse Electric Corp.: *See*—
Bratton, Raymond J.; and Andersson, Clarence A., 4,376,004, Cl. 156-89.000.
Kmonk, Stanley; and Cadwell, Dennis J., 4,376,092, Cl. 376-353.000.
Milianowicz, Stanislaw A., 4,376,235, Cl. 200-50.0AA.
Pope, James M.; and Harrison, Don E., 4,376,070, Cl. 252-629.000.
Westvaco Corporation: *See*—
Murphy, Joseph M.; and Sulewski, Frank P., Jr., 4,375,970, Cl. 493-337.000.
Wetzel, William H.; Pan, Hsi-Lung; Goodwin, Robert J.; and Wilkinson, John E., to Reichhold Chemicals, Incorporated. Inhibitor for reducing formation of chlorinated dioxins in manufacture of chlorinated phenols. 4,376,220, Cl. 568-776.000.
Weyerhaeuser Company: *See*—
Brown, Robert A., 4,376,042, Cl. 209-38.000.
Johnston, Robert E.; and Kudalkar, Kishor N., 4,375,752, Cl. 206-586.000.
Wheadon, Ellis G., to General Motors Corporation. Battery intercell connector manifold. 4,376,156, Cl. 429-160.000.
Wheeler, Peter C.: *See*—
Levy, Alan W.; Szanto, Attila J.; and Wheeler, Peter C., 4,376,253, Cl. 307-590.000.
Whitaker, Roger B.: *See*—
Sokol, David G.; Whitaker, Roger B.; Lord, John J.; and Beams, David M., 4,376,298, Cl. 364-551.000.
White, Mary A.: *See*—
Bergman, Robert G.; Becker, Paul N.; and White, Mary A., 4,376,217, Cl. 564-448.000.
White, Robert S., Jr.: *See*—
Rothwell, Harold L., Jr.; and White, Robert S., Jr., 4,376,259, Cl. 315-074.000.
Wickes Corporation, The: *See*—
Simpson, Harold G.; and Wilson, Robert S., 4,375,848, Cl. 206-321.000.
Wiegleb, Ludwig: *See*—
Wolter, Erhard; Wiegleb, Ludwig; Kruger, Roland; Ladwig, Heinz; and Ehrlinger, Klaus, 4,376,109, Cl. 423-659.000.
Wiker, Richard M., to Corning Glass Works. Zinc borosilicate opal glasses. 4,376,170, Cl. 501-32.000.
Wilde, Harold J.: *See*—
Smyth, William A.; Carlson, Graydon S.; and Wilde, Harold J., 4,375,850, Cl. 206-387.000.
Wilhelm Hegenscheidt Gesellschaft mbH: *See*—
Liermann, Manfred, 4,375,773, Cl. 82-1.200.
Wilk, Hans-Christoph: *See*—
Zeidler, Ulrich; Fischer, Herbert; Hase, Brigitte; Moller, Hinrich; and Wilk, Hans-Christoph, 4,376,120, Cl. 424-249.000.
Wilkinson, John E.: *See*—
Wetzel, William H.; Pan, Hsi-Lung; Goodwin, Robert J.; and Wilkinson, John E., 4,376,220, Cl. 568-776.000.
Willcox, Leland J. Golf ball drive length indicating apparatus. 4,375,888, Cl. 273-184.00R.
Williams, James L.: *See*—
Sabia, Raffaele A.; and Williams, James L., 4,376,231, Cl. 174-92.000.
Wilson, Douglas, to British Petroleum Company Limited, The. Process for setting a latex of a film forming material. 4,376,176, Cl. 524-7.000.
Wilson, Kenneth J.; and Rosene, Ronald G., to Wilson Tool Company. Adjustable punch head. 4,375,774, Cl. 83-140.000.

Wilson, Robert S.: *See*—
Simpson, Harold G.; and Wilson, Robert S., 4,375,848, Cl. 206-321.000.
Wilson Tool Company: *See*—
Wilson, Kenneth J.; and Rosene, Ronald G., 4,375,774, Cl. 83-140.000.
Winter, William E.: *See*—
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Wissman, Terry L.: *See*—
Schoch, Daniel A.; and Wissman, Terry L., 4,375,785, Cl. 100-35.000.
Wittwer, Fritz. Offset printer. 4,375,790, Cl. 118-219.000.
Woerz, Stephen E., to Boise Cascade Corporation. Method for forming a composite container including a reversely curled body member. 4,375,969, Cl. 493-158.000.
Wolf, Joachim: *See*—
Lowiciki, Norbert; Wolf, Joachim; and Schwarz, Wolfgang, 4,376,108, Cl. 423-540.000.
Wolf, Milton: *See*—
Carlson, Richard P.; Fenichel, Richard L.; Lewis, Alan J.; and Wolf, Milton, 4,376,124, Cl. 424-308.000.
Wolf, Rudolf H., to Tecumseh Products Company. Lubricating device for a motor compressor. 4,375,944, Cl. 417-368.000.
Wolter, Erhard; Wiegleb, Ludwig; Kruger, Roland; Ladwig, Heinz; and Ehrlinger, Klaus, to Holstein & Kappert GmbH; and Dortmunder Actien-Brauerei. Process and apparatus for disposal of noxious vapors emanating from wort and mash during production of beer in brewery installations. 4,376,109, Cl. 423-659.000.
Woolslayer, Joseph R.: *See*—
Jenkins, Cecil; and Woolslayer, Joseph R., 4,375,892, Cl. 280-43.230.
Wovkulich, Peter M.: *See*—
Uskokovic, Milan R.; and Wovkulich, Peter M., 4,376,207, Cl. 549-417.000.
Wu, Pai-Chuan: *See*—
Byrne, Robert E.; Cancio, Leopoldo V.; Raffel, Arthur J.; and Wu, Pai-Chuan, 4,376,147, Cl. 428-167.000.
Wurm, John H.; Middendorf, Lyle R.; and Biggs, William W., to Li-Cor, Inc. Area meter. 4,375,920, Cl. 356-380.000.
Yamagishi, Toshio: *See*—
Hiraike, Shizuka; Yoshida, Yukihiro; Hashimoto, Shintaro; Tada, Mitsuo; and Yamagishi, Toshio, 4,375,917, Cl. 355-14.00R.
Yamakami, Yoshihiro: *See*—
Kajiyama, Yasuo; Yokoyama, Kazuo; and Yamakami, Yoshihiro, 4,375,899, Cl. 296-213.000.
Yamamoto, Hideo; Isa, Isao; and Shibuya, Morioki, to Japan Carlit Co., Ltd., The. Process for recovering Cr(VI) ions from a chlorate cell liquor. 4,376,099, Cl. 423-54.000.
Yamane, Ken, to Nissan Motor Co., Limited. Engine system with exhaust turbine supercharger. 4,375,748, Cl. 60-611.000.
Yamane, Masataka: *See*—
Imasu, Kenichiro; Nakazawa, Akira; Yamane, Masataka; and Takahashi, Kengo, 4,375,753, Cl. 62-160.000.
Yamanouchi Pharmaceutical Co. Ltd.: *See*—
Ozasa, Teruaki; and Kashiwagi, Teruya, 4,376,200, Cl. 544-26.000.
Yan, Tsoung-Yuan, to Mobil Oil Corporation. Two-stage uranium in situ leaching process. 4,376,098, Cl. 423-20.000.
Yanagisawa, Osamu; Ishigai, Tsuneo; and Kiyama, Masayoshi, to Nippon Nenryo Company Ltd. Impact-fatigue test machine for grinding balls. 4,375,762, Cl. 73-12.000.
Yano, Shozo; Hujinaga, Yasuhiro; Kawara, Toshio; and Komoto, Akira, to Shimadzu Corporation. Electronic balance. 4,375,838, Cl. 177-50.000.
Yazolino, Lauren F.: *See*—
Anderson, Jared A.; Van Gelder, Robert V.; Yazolino, Lauren F.; and Braun, Jimmy E., 4,376,297, Cl. 364-200.000.
Yokoyama, Kazuo: *See*—
Kajiyama, Yasuo; Yokoyama, Kazuo; and Yamakami, Yoshihiro, 4,375,899, Cl. 296-213.000.
Yokoyama, Yoshihiro: *See*—
Kamon, Yoshiyuki; and Yokoyama, Yoshihiro, 4,376,233, Cl. 179-115.5VC.
Yoshida, Yukihiro: *See*—
Hiraike, Shizuka; Yoshida, Yukihiro; Hashimoto, Shintaro; Tada, Mitsuo; and Yamagishi, Toshio, 4,375,917, Cl. 355-14.00R.
Maegawa, Toshiyuki; Yoshida, Yukihiro; Tominaga, Satoshi; and Izaki, Toru, 4,375,922, Cl. 400-70.000.
Yoshikawa, Kiyoaki: *See*—
Okamoto, Jiro; Ishigaki, Isao; Fukuzaki, Hironobu; Shimbo, Shozo; and Yoshikawa, Kiyoaki, 4,376,021, Cl. 204-159.160.
Yoshimi, Isao: *See*—
Osakabe, Kuniharu; Yoshimi, Isao; and Sakurai, Soichi, 4,376,272, Cl. 335-211.000.
Yoshimura, Masahito: *See*—
Ohyama, Eiji; Nagai, Hiroo; and Yoshimura, Masahito, 4,376,212, Cl. 560-205.000.
Yoshitomi Pharmaceutical Industries Ltd.: *See*—
Suenobu, Koreyoshi; Hidaka, Yasuhiro; and Ike, Tetsuji, 4,376,181, Cl. 524-343.000.
Yoshizo Obata: *See*—
Uenosono, Chikasa; Okada, Takao; Matsuki, Junya; Naito, Tadashi; Inoue, Shinichiro; and Obata, Yoshizo, 4,376,295, Cl. 361-21.000.
Young, Lester L.; Young, Thomas R.; and Young, Michael A. Chimney top spark arrester. 4,375,783, Cl. 98-70.000.
Young, Michael A.: *See*—
Young, Lester L.; Young, Thomas R.; and Young, Michael A., 4,375,783, Cl. 98-70.000.
Young, Thomas R.: *See*—
Young, Lester L.; Young, Thomas R.; and Young, Michael A., 4,375,783, Cl. 98-70.000.
Zega, Bogdan, to Battelle Development Corporation. Cylindrical cathode for magnetically-enhanced sputtering. 4,376,025, Cl. 204-192.00R.
Zeidler, Ulrich; Fischer, Herbert; Hase, Brigitte; Moller, Hinrich; and Wilk, Hans-Christoph, to Henkel Kommanditgesellschaft Auf Aktien. Therapeutic compositions with a cytostatic action containing isocyanuric acid derivatives and process of manufacture. 4,376,120, Cl. 424-249.000.
Zerlik, Willibald, to BBC Brown, Boveri & Company, Limited. Water distributor. 4,375,823, Cl. 137-340.000.
Zinke, Horst, to Ciba-Geigy Corporation. 1,3,2-Dioxaphospholanes as lubricant additives and lubricants containing same. 4,376,054, Cl. 252-46.700.
Zucker, Friedrich J.; Osthaus, Georg; Hanig, Gernot; and Culemeyer, Karl, to Supraton F. J. Zucker GmbH. Process for the continuous production of water insoluble metal soaps. 4,376,079, Cl. 260-413.000.
Zurn Industries, Inc.: *See*—
Netkowicz, Robert J.; Schnall, Ira H.; and Kraeling, John B., Jr., 4,376,091, Cl. 376-283.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 8TH DAY OF MARCH, 1983

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Brent, Robert G., to Textron, Inc. Hydraulic piston rod seal. Re. 31,171, Cl. 277-188.00R.

Caterpillar Tractor Co.: *See*—
Hedgcock, Richard L., Re. 31,168, Cl. 192-89.00B.

Drake, James R.: *See*—
Schweitzer, Henry H.; and Drake, James R., Re. 31,167, Cl. 114-39.000.

Hedgcock, Richard L., to Caterpillar Tractor Co. Wear ring for spring of friction coupling. Re. 31,168, Cl. 192-89.00B.

Holmes, Robert G., to Ohio Agricultural Research & Development Center. Sorting system and apparatus. Re. 31,169, Cl. 209-699.000.

Mazman, Martin S. Variable resistance exercising device. Re. 31,170, Cl. 272-118.000.

Nishimura, Satoshi; Sato, Kenichi; and Sugiura, Youji, to Sanyo Electric Co., Ltd. Sound synthesizing apparatus. Re. 31,172, Cl. 179-15.55T.

Ohio Agricultural Research & Development Center: *See*—
Holmes, Robert G., Re. 31,169, Cl. 209-699.000.

Sanyo Electric Co., Ltd.: *See*—
Nishimura, Satoshi; Sato, Kenichi; and Sugiura, Youji, Re. 31,172, Cl. 179-15.55T.

Sato, Kenichi: *See*—
Nishimura, Satoshi; Sato, Kenichi; and Sugiura, Youji, Re. 31,172, Cl. 179-15.55T.

Schweitzer, Henry H.; and Drake, James R., to Windsurfing International, Inc. Wind-propelled apparatus. Re. 31,167, Cl. 114-39.000.

Sugiura, Youji: *See*—
Nishimura, Satoshi; Sato, Kenichi; and Sugiura, Youji, Re. 31,172, Cl. 179-15.55T.

Textron, Inc.: *See*—
Brent, Robert G., Re. 31,171, Cl. 277-188.00R.

Windsurfing International, Inc.: *See*—
Schweitzer, Henry H.; and Drake, James R., Re. 31,167, Cl. 114-39.000.

LIST OF REEXAMINATION PATENTEES

TO WHOM

CERTIFICATES WERE ISSUED

Morgan, William L., to Intel Corporation. Self-aligning double polycrystalline silicon etching process. B1 4,142,926, Cl. 148—181.

Intel Corporation: *See*—
Morgan, William L. B1 4,142,926, Cl. 148—187.

Cricchi, James R.; Fitzpatrick, Michael D., to Westinghouse Electric Corporation. Silicon on sapphire MOS transistor. B1 4,053,916, Cl. 357—23.

Westinghouse Electric Corporation: *See*—
Cricchi, James R.; Fitzpatrick, Michael D. B1 4,053,916, Cl. 357—23.

Okada, Yasunori; Fukuhara, Junzo, to Hitachi Chemical Company, Ltd. Electrical insulating coating composition. B1 4,209,438, Cl. 524—314.

Hitachi Chemical Company, Ltd.: *See*—
Okada, Yasunori; Fukuhara, Junzo. B1 4,209,438, Cl. 524—314.

LIST OF DESIGN PATENTEES

AFA Consolidated Corporation: *See*—
Wesner, Walter H.; Garneau, Richard P.; Barrett, John F.; and Licari, Anthony, 268,204, Cl. D23-34.000.

Appel, Mel; and Kress, George, to Appel, Mel. Combination chair and stepstool. 268,148, 3-8-83, Cl. D6-4.000.

Apres Ski Partnership: *See*—
Smith, Ronald A.; and Goudberg, Johan R. P., 268,166, Cl. D8-331.000.

Arnold, Douglas A.: *See*—
Arnold, Gene D.; and Arnold, Douglas A., 268,153, Cl. D6-75.000.

Arnold, Gene D.; and Arnold, Douglas A. Seat. 268,153, 3-8-83, Cl. D6-75.000.

Asano, Masakatsu; and Nezu, Shigeru, to General Corporation, The. Hand held radio transceiver or similar article. 268,182, 3-8-83, Cl. D14-68.000.

Banko, Ronald C., to Stromberg-Carlson Corporation. Telephone base. 268,181, 3-8-83, Cl. D14-60.000.

Barrett, John F.: *See*—
Wesner, Walter H.; Garneau, Richard P.; Barrett, John F.; and Licari, Anthony, 268,204, Cl. D23-34.000.

Beller, Frank W., to Belson Manufacturing Co., Inc. Cooking grill. 268,160, 3-8-83, Cl. D7-332.000.

Belson Manufacturing Co., Inc.: *See*—
Beller, Frank W., 268,160, Cl. D7-332.000.

Benke, Wolfgang E. F., to Centra Leichtmetall-Rader GmbH. Vehicle wheel. 268,179, 3-8-83, Cl. D12-211.000.

Berner, John M. Snow thrower. 268,184, 3-8-83, Cl. D15-12.000.

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CLASSIFICATION OF PATENTS

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